INFORMATION SHARING IN HUMANITARIAN SUPPLY CHAIN MANAGEMENT: THE CASE OF REFUGEES CRISIS IN JORDAN

RAEDA JAMAL SAA'DA

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ABSTRACT

Information sharing entails exchange of timely and accurate information exchange among supply chain partners to ensure effective and efficient humanitarian logistics and the overall supply chain management (SCM) for successful relief operation. The process is essential for strategic planning and decision making to ensure effective operations, including timely and better response to affected population and increased performance at minimal costs across the supply chain relationships. This study explored information sharing barriers of supply chain management between humanitarian organizations in Jordan at the horizontal level of coordination using qualitative research design. The researcher was mainly motivated by the ineffective and uncoordinated operational relationships of the HSCM largely because of lack of information sharing; and limited research on information sharing barriers at horizontal level of SCM. Prior to main field activity, the researcher performed a pilot study on humanitarian situation in Jordan. The main field activity collected primary data using semi-structured interviews from research participants representing a total of eight case studies of humanitarian organizations in Jordan while secondary data was collected from literature, organizational documents (e.g.booklet and reports) and websites. Data analysis employed two-stage within case and cross-case thematic analysis.

The results showed that information sharing was limited by diverse barriers related to managerial, organizational, technical, financial, and socio-cultural and religious barriers. These barriers had varied relationship with information sharing from case to case despite that organizational related barriers to information sharing were the most common, then technical barrier, managerial, quality, socio-cultural and religious barriers, financial barrier, language and opportunistic barriers.

This study recommends various strategic interventional measures that may promote effective and efficient humanitarian logistics and the overall supply chain management (SCM) for successful relief operation. These include engaging in collaborative relationships among supply partners so as to access critical and missing information and/or knowledge at organizational level to promote cooperation and supply chain efficiencies; joint investment in specific assets, including electronic data interchange as well as effective governance mechanisms deployment; sharing information based on conducive environmental conditions that promote organizational performance; adopt mechanisms for sharing resources such as information
and knowledge while maintaining autonomy over other organizations; and eliminating opportunistic related risks by using formal contracts with incentives and penalties to safeguard asset-specific investments while promoting information processing and sharing capabilities. Moreover, the study concludes that there is need for humanitarian actors to establish collaborative information sharing strategy to ensure effective supply chain relationships and increased performance, including timely and better response to the target population.

Overall, this study is important since it provides insight on different levels of information sharing based on different evidence based strategies and effective mechanisms to ensure better operations. Moreover, the contributes new knowledge to information sharing of humanitarian supply chain management particularly and Business supply chain management at horizontal level given that only few studies have focused on this research area.

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ACRONYMS AND ABBREVIATIONS

BSCM: Business supply chain management

CC: Cyber City

CDC: Centres for Disease Control & Prevention

CMAM: Commuinty -Base Management of Acute Malnutrition

CSCMP: Council of Supply Chain Management Professionals

DRC: Danish Refugee Council

DRP: Distribution Resource Planning

ECR: Efficient consumer response

EDI: Electronic Data Interchange

EM-DAT: Emergency Events Database

HSCM: Humanitarian Countryu Team

HSCM: Humanitarian Supply Chain Management

ICS: Information sharing and communication system

IFRC: International Federation of Red Cross

IMC: International Medical Corps

IOS: Inter-Organizational Systems

IS : Information Sharing

JHAS: Jordan Health Aid Society

JIT: Just in time

KAP: King Abdullah Park

M&E: Monitoring and Evaluation

MAM: Moderate Acute Malnutrition

MMUs: Mobile medical units

MOI: Ministry of Interior

MOU: Memorandum of Understanding

MRP: material requirements planning

MSF: Médecins Sans Frontières

NGOs: Non-govermental Organizations

NRP: National Resilience Plan

OCHA: Office for the Coordination of Humanitarian Affairs

SAM: Severe acute malnutrition

SCM: Supply chain management

TAM: Technology acceptance model

TQM: Total quality management

UNCT: United Nation Country Team

UNDP: United Nation Development Program

UNHCR: The United Nation High Commission for Refugees mandate

UNICEF: United Nation International Children Education Fund

UNISDR: The United Nation Office for Disaster Risk Reduction,

VASYR: Vulnerability Assessment of Syrian Refugees

WASH: Water, Sanitation, and Hygiene

WFP: World Food Programme

WFP: World Food Programme

CHAPTER 1: INTRODUCTION

This research aims to explore the information sharing (IS) barriers of supply chain management (SCM) at the horizontal level of coordination between humanitarian organizations in Jordan. This chapter highlights the research background and the provision that gives rise to this research. It highlights the research aim and objectives, introduces the research literature and methodology, and presents the empirical context. Finally, the thesis structure is also provided.

1.1 Research background

In recent years, a dramatic increase in both natural and man-made disasters has led to an increased interest both from logistics and SCM academics and practitioners (Kovács & Spens, 2011, 2007). According to EM-DAT-Emergency Events Database (2011), natural disasters, including floods, famine plus manmade disasters (conflict and refugee) have continued to impact communities and nations across the world in the recent past, and this trend is projected to persist. During 1992 and 2012, disasters killed 1.3 million and affected 4.4 billion people, leading to an overall cost of damages of two trillion dollars (UNISDR-The United Nation Office for Disaster Risk Reduction, 2012). The forecasts are expected to increase five times over the next fifty years (Thomas & Kopczak, 2005).

As for manmade disaster, Syria is one of the most complex and dynamic humanitarian crisis in the world today (OCHA, 2016). The ongoing conflict in Syria continues to have a devastating effect on civilians as the crisis enters its sixth year. Around 250,000 people have been killed as a result of the crisis, and over 6.6 million people were internally displaced as estimated by the UN reports (OCHA, 2016). In addition, more than 4.8 million Syrian refugees have been forced to leave Syria to neighboring countries in the region, mainly to Turkey, Lebanon and Jordan. The conflict in

Syria has resulted in one of the largest refugee flows since World War II, and refugees from Syria are currently the biggest population under The United Nation High Commission for Refugees (UNHCR) mandate (UNHCR, 2016).

Currently, 11.5 million Syrians need heath care ,12.1 million require water and sanitation, whereas 5.7 million children require education, around 2.5 million people need food and more than 1.5 million need shelter and household goods (OCHA 2016; UNICEF; 2015). Among the neighboring countries, Jordan hosts around 1.4 million Syrians among which, 630,000 are registered as refugees by UNHCR. Around 140,000 of the Syrian refugees in Jordan are in camps while the remaining live in host communities (UNHCR, 2015). In providing for their needs, a reliable SCM design of humanitarian relief services can play a more elaborate role in effecting relief response to such disasters (Heeringen, 2010), and the objective is to provide humanitarian assistance in the form of food, water, medicine, shelter and supplies (Beamon & Balcik, 2008). IS is one main driver in SCM (Mclachlin & Larson, 2011; Ma, 2011), representing the basis of the entire SCM, as it provides the required data for the SCM to make decisions at the three levels (strategic, tactical and operational) (Ma, 2011). In a SCM, IS represents the main tool of coordination, connecting the members of the supply chain through various available technologies (Choi, 2010).

Due to the growing refugee crisis, humanitarian NGOs need to respond by setting up effective supply chains to assemble and distribute the required supplies. This will allow better decision making lead to an effective and efficient SCM as argued by Van Wassenhove (2006) “by enabling humanitarian organizations to make the best use of resources and matching the available supplies with the highest priority needs in the shortest possible time” (p.475-489). Since in the humanitarian supply chain management (HSCM) effectiveness ensures saving time and time saved means more live saved (Cozzolino *et al.,* 2012)., while the efficiency ensures that we are saving costs and saving costs mean more lives helped (Cozzolino *et al.,* 2012).

An effective IS and communication system (ICS) (with accurate and timely information) are essential for all organizations anywhere in the world, regardless of size or purpose and it's a crucial component of successful humanitarian relief efforts from early warning and preparedness to emergency response and recovery activities (Tusiime & Byrne, 2011). An ICS also facilitate coordination, information creation, and sharing within and among humanitarian organizations and their partners -important organizational attributes for effective and efficient responses in crises (Tusiime & Byrne 2011; Murray, 2005), specifically, with regard to information sharing. World Food Programme (WFP) uses their resource planning software that permits the global real time connection of actors in the chain at different levels to share information that is relevant to the current situation (Cozzolino *et al*,. 2012).

1.2 Research Problems.

SCM consists of delivery of the right products or services, at the right place, at the right time and to the right customers (Fawcett *et al.,* 2008). The objective of humanitarian organizations in crisis response is to alleviate human suffering and meet basic needs such as food, shelter, emergency health care or psychological assistance after disasters or during conflicts (Scholten *et al*., 2010; Beamon & Balcik, 2008). Nevertheless, plans and activities to meet this objective will be based on information such as affected population numbers, geographical locations, needs and logistics information as well. Sharing and exchange of information is one of the basic strategies in SCM for efficient and effective response (Cho *et al.,* 2012; Nyaga *et al*., 2010).

However, the HSCM has only recently been given serious consideration as a SCM discipline (Overstreet *et al*., 2011). The concepts of HSCM are not well established in the academic supply chain literature (Oloruntoba & Gray, 2006). Recently HSCM field gained attention in the research (Kovács & Spins, 2011). Information sharing concepts and systems as the main tool for coordination is not well established in relief chain because donors tend to fund NGOs, insist that their money goes directly for specific missions or activities to help affected people, and not to finance back-office operations nor infrastructure (Whiting & Ayala-Ostrm 2009; Beamon & Balcik; 2008; Oloruntoba & Gray 2006; Thomas & Mizushima 2005; Murray, 2005), and donors to see tangible, measurable results (Scholten *et al*., 2010). Information in relief chain is often unreliable, incomplete, non-existence or slow (Ihan 2011; Day *et al.*, 2009).

Lack of information sharing system and technology in humanitarian relief organizations affect information flow in HSCM (Leiras *et al.*, 2014; Maspero & Itman, 2008; Chikolo, 2006). NGOs suffer from services duplication due to the limited information sharing between them; therefore, under constant pressure to keep overhead costs down and generally spend less than 1 to 3% of operation revenues on information communication technology (Barrigan & Hemingway, 2010). In addition, HSCM usually operates in highly uncertain environments. Information sharing plays a key role in various supply chain (SC) functions such as demand generation and planning, order execution, capacity planning and purchasing (Liu & Kumer, 2003). IS in a supply chain (SC) involves many activities such as sharing of information about production, inventory level, delivery, shipment, capacity, sales and performance within firms and among SC members (Rai *et al* 2006). Moreover, IS ensures that the right information is available for the right partner in the right place and at the right time (Liu & Kumer, 2003). Despite the importance of information flow in SCM, it appears that the level of IS, information quality and IT tools usage still has not reached the ideal state (Omar *et al*., 2010).

IS enables humanitarian actors as well as companies to make better decisions in their operation leading to better resource utilization and lower supply chain costs. Logistical coordination is needed both in between humanitarian organizations as well as in the HSCM (Atlay *et al*., 2009; Van Wassenhove, 2006; Oloruntoba & Gray; 2006). Information sharing in HSCM is often unreliable, incomplete or even non-existent (Ihan 2011; Day *et al.*, 2009). Besides, HSCM has an unstable environment, unpredictable demand, whereas in commercial supply chain management (CSCM) information flow creates efficient coordination through supply chain channels since the degree of instability in humanitarian environment is much higher than commercial. For example, in humanitarian the demand assessed through aid agencies after the disaster occurred and generated from random events that are unpredictable in terms of timing, location, type and size. This is because the chaotic nature of the disaster makes information a challenging task and the services provided to the vulnerable depends on the donors situation, while in commercial environment demand can be forecast within known parameters or data (Dolinskaya *et al*., 2011, Beamon & Balcik, 2008, Kovács & Spens, 2007; Beamon, 2004). Notably, this information has a direct effect on decision making process of humanitarian activities (Balcik *et al*., 2010).

In Jordan, refugees' crisis Zaatari camp is the biggest refugee camp and is the world's second largest refugee camp (UNHCR, 2015). Moreover, there are many humanitarian organizations that provide different services for the refugee's crisis in Jordan, especially the Syrian refuges crisis. It is important for these humanitarian organisations to cater for needs of the refugees. Shared Information between them is an important strategy to enhance and overcome the poor coordination (UNHCR, 2015). Based on the above discussion, this research was therefore conducted in order to address the barriers and challenges behind sharing information between humanitarian organizations in Jordan.

1.3 Motivation and research empirical context

Thomas & Kopczak (2005) defined Humanitarian logistics (HL) as the process of planning, implementing and controlling the efficient, cost-effective flow and storage of goods and materials as well as related information from the point of origin to the point of consumption for the purpose of alleviating the suffering of vulnerable people. This includes activities such as assessment, procurement, transport and warehousing (Blecken, 2010). Studies on HL and SCM date several decades behind that of commercial sector, particularly with regard to recognition, utilization as well as coordination, IS and resources (Jahre *et al*., 2009; Whiting & Ayala-Ostrom, 2009; Thomas & Fritz, 2006). Kovács & Spens (2007) even describe literature on HL as scant, while other authors have argued that it is still in its infancy (Leiras *et al*., 2014; Overstreet *et al*., 2011; Tatham *et al.*, 2009; Beamon & Balcik, 2008). Therefore the HSCM appears to have recently drawn serious attention in SCM and the current literature is mainly practitioner-oriented especially with the increase of natural and man-made disasters (Santarelli *et al.*, 2015; Kovács & Spens, 2011, 2007, Apte, 2010; Altay & Green, 2006) such as the refugees' crisis in Jordan.

Among the middle east countries, Jordan is described as a unique country because of its liberal refugee admission policy that allows it to host many refugees such as Palestinians, Iraqis, and currently Syrian refugees whose number has reached almost 630,000 (UNHCR, 2015). The situation has prompted the government and humanitarian organizations to provide relief supplies to Syrian refugees. For instance, there has been much effort from the humanitarian organizations (UN- organizations, international NGOs and local NGOs) in Jordan to supply their needs which includes (food, health care, shelter, education, water and sanitation, among others so as to save lives). In addition, the Syrian refugees' crisis has a negative impact on the Jordanian economy and resources which were already underdeveloped before the crisis (Achilli, 2015, p.1-9; Francis, 2015). However, there is a significant lack of coordination among different agencies along with considerable challenges contributing to the coordination gap (Fargues, 2014; Zyck, 2013, p. 10-12; Libal & Harding, 2011).

IS is an essential activity and tool in SC coordination (Liu *et al.*, 2015 ; Deghedi, 2014) that include improving the information quality and information processing capabilities of all humanitarian organizations partners in order to provide the right needs or service to the right vulnerable people at the right time (Wong *et al*., 2015). Therefore, this research will address the information sharing issue focusing on the information sharing barriers of supply chain management between humanitarian organizations in Jordan. The researcher served for almost 13 years in the Royal Medical Service (RMS) in Jordan as a logistic and supply officer for medical supplies and this led me to an interest in the logistics and SCM in humanitarian sector, particularly in information sharing issues in humanitarian organizations and the challenges facing them as an important players in providing different services for Syrian refugees in Jordan. In addition, the researcher learned that humanitarian organizations lack understanding on the importance of information sharing as a tool of coordination between them for an effective and efficient service and to avoid duplication of services and therefore increased cost of relief supplies and unequal service delivery.

Consequently, based on the above, there are many justifications that motivated the researcher to choose humanitarian organizations in Jordan as a research context, which can be summarized in the following points:

- The number of natural and manmade disasters are increasing every year and there was about 500 disaster killing a round 75000 people and affecting some 200 million people (van Wassenhove, 2006), Reliefweb (2015) reported rising rates of hydro-meteorological disasters despite relatively constant occurrence of geophysical disasters from 1994 to 2013. During this period, there were 6,873 natural disasters across the world which killed 1.35 million people or about an average of 68,000 lives and about 218 million lives affected annually.
- And it has been predicted that, over the next 50 years, both natural and manmade disasters will increase fivefold (Thomas & Kopczak, 2005)
- The fact that HL and SCM is an emerging science and gaining attention by researchers warrant more research work (Bag 2016 ;Leiras *et al.*, 2014, Overstreet *et al.*, 2011; Tatham *et al.*, 2009: p. 1008; Kovács & Spens, 2007).
- Among the Middle East countries Jordan is described as a host country for many refugees such as Palestine, Iraqi and Syrian in addition to the unpredictable natural disaster (Casey, 2014; De Bel-Air, 2009; Weiss-Fagen, 2007).
- NGOs face challenges such as lack of recognition of the importance of logistics (Howden, 2009), shortage of professional staff (Shub & Stonebraker, 2009), and limited collaboration and coordination (Adivar, 2010; Singh & Power, 2009).
- Although the HSCM may share similarities with CSCM, Adivar (2010) stated that NGOs and commercial organizations differ in their strategies, goals, information system lead time and demand pattern and so on (Widera *et al*., 2013; Charles *et al*., 2010; Ertem *et al*., 2010; Beamon & Balcik, 2008; Beamon, 2004).

- The very characteristics of HL are the unpredictability of demand, suddenness of occurrence, the high stakes associated with the time lines of deliveries, and a lack of resources (Balcik & Beamon, 2008).
- There is high growth in the number of NGOs that serviced people in different fields such as famine, education, culture, research, health, social services, environment, law and policy (Al-Qirim, 2007).
- The role of NGOs is becoming more visible in serving communities in developing economies especially in improving the status of the Middle East region at the economic, social and cultural levels and specifically in Jordan (Chalhoub, 2009).

1.4 Research aim and objectives

This research aims at exploring information sharing barriers of supply chain management between humanitarian organizations in Jordan at the horizontal level of coordination . More specifically, the research objectives are to: -

1. To explore:-

a) Supply Chain Management issues (concept, benefits) in humanitarian organizations in Jordan.

b) Coordination Activity in Supply Chain Management in humanitarian organizations in Jordan.

c) Information sharing mechanism at horizontal coordination of Supply Chain Management between humanitarian organizations in Jordan.

2. To identify the information sharing barriers at the horizontal level of coordination between humanitarian organisations in Jordan.

3. To identify and recommend strategic action in order to bridge the barriers of information sharing to improve coordination between humanitarian organizations in Jordan.

1.5 Research methodology

Literature highlights the need for more qualitative-based empirical data in HSCM. Studies have shown that qualitatitve HSCM studies are still limited within the academic work (Oloruntoba & Gray, 2006). Similarly, more recent reports suggest that there is a derath of empirical data collection on HSCM through case studies of qualitative methodologies (Kovács & Spens, 2011; Kunz & Reiner 2012). This study adopted qualitative methodology to achieve the aim and objectives for this research. Qualitative Research is concerned with making knowledge claims mainly based on constructivist perspectives such as meanings constructed socially and historically, multiple meanings of human experiences and intent to develop a theory or pattern (Creswell, 2013), and it is the appropriate approach for theory building (Eisenhardt & Graebner, 2007). This study will employ qualitative methods to collect and analyse data in order provide insight on conceptual factors limiting IS in the context of HSCM.

Several research activities were followed in the current research: literature review, pilot study, multiple case, comparative studies, and reporting the empirically driven results as well as guidelines. Moreover, this study used primary and secondary data collection sources consistent with the view that a research study entails various data collection techniques such as interviews, reports, archive records and websites were used (Saunders *et al.*, 2012, 2007). Case study methodology has been used to collect the data in the field of study. According to Yin (2013, 1994), case studies are rich, empirical descriptions of particular instances of a phenomenon that are typically based on a variety of data sources. As discussed earlier, this research seeks to identify and understand the barriers of IS within the field of HSCM that social interaction may have, hence the interpretive view of inductive approach working with what Saunders *et al.* (2009) describe as the social actors within the field was adopted.

Multiple-case designs were adopted for the current study, numerous case studies were conducted and the cross- case analysis was used for better theory building as noted by Perry (1998). The data gathered from multi- cases strengthened the findings associated with a single-case and filled any gap in the first case as described by Yin (2009). In addition, a qualitative multiple-case study was used to provide comparisons between individual organizations or cases. The study involved different Humanitarian organizations in Jordan by exploring the barriers and challenges to share information and to coordinate between HSCM contexts.

Two stage- thematic analysis approaches were employed: the first stage involved analysis of each case study independently, while the second stage involved cross cases-analysis to provide a holistic view of the study and generate an overall picture (Yin, 2009). From replications and comparisons between numerous case studies, subthemes were used to link key themes and categories in order to explore the barriers of sharing information in the context of HSCM. Consequently, this increased the capability of reliability and validity of the findings to develop new theory. In view of the research topic, the researcher collected data from all relevant sources as a new contribution to solving methodological gaps identified in the previous studies.

1.6 Structure of the thesis

This thesis consists of an introductory chapter and seven more chapters, and a brief introductory description for each chapter is given below:

Chapter 1-Introduction: The first chapter explains the research background, the research aim and objectives, theoretical context as well as the research motivation, introduction of empirical context and a brief presentation of the research methodology.

Chapter 2-Literature Review: The literature on the SCM in business or commercial sector, HL and SCM, IS, vertical and horizontal coordination in supply chain management field are reviewed and in this chapter. The researcher elaborated theoretical foundation of SCM, the understanding of SCM in business and humanitarian field in order to explain its theoretical foundation, focusing on HL and SCM particularly, the IS topic at the horizontal and vertical levels of supply chain coordination focusing on the barriers of IS to find the research gaps. Finally, key research gaps are identified.

Chapter 3-Research Context-humanitarian context Review: The humanitarian context in Jordan is reviewed. The chapter provides the historical background of refugee's crisis in Jordan and identifies the driving forces behind these crises. The importance of the humanitarian organization in Jordan for providing various types of service was explained as well as the importance of coordination between them focusing on the IS issue and the challenges.

Chapter 4-Research Methodology: Within this chapter, the research was explained and discussed, research philosophy and approach ,the qualitative research methods and the case study strategy ,comparison between qualitative and quantitative research and a comprehensive review of qualitative research was discussed and justifications for using qualitative and case study strategy. Furthermore, data collection and analysis was provided. The empirical work is comprised of two phases: the pilot study interviews and the multiple-cases study. Finally, thematic analysis (TA) justifications were discussed.

Chapter 5- Research Findings from the pilot study: In this phase a semi-structured interview was done to explore the topic, the HSCM and IS understanding from the humanitarian organizations perspective to investigate the importance and challenges of this topic. The findings were discussed based on a semi-structured interview protocol. Following that, the factors for information sharing challenge in HSCM proposed.

Chapter 6-Findings from Multiple-Case Studies: In this chapter the second phase of the exploratory research using the multiple-cases study was provided. Each case includes semi-structured interviews as the primary qualitative data using a case study and archival records as a secondary data . Then each case study is individually analyzed to explore the barriers of IS. Finally, all the findings for each case study were presented in this chapter.

Chapter 7- Cross-Case Analysis Findings and Discussion: Cross-cases analysis of all cases was explained in order to elaborate the similarities and differences between the key themes. And the final key findings were provided to achieve the research aim and objectives.

Chapter 8-Conclusion and Contributions to Knowledge: A summary of final research findings was provided in this chapter. Theoretical and managerial contributions as well as limitations research and suggested recommendations for future research are addressed.

CHAPTER 2: LITERATURE REVIEW

This chapter aims to provide a critical review of literature related to supply chain management (SCM) and humanitarian supply chain management (HSCM). The chapter then narrows to the main topic in this research which is the information sharing (IS) in SCM. To ensure well organized and systematic review, the chapter has three main sections. In the first section, elaboration on the understanding of SCM to explain its evolution and definitions, and for HSCM as well. The second section discussed coordination topic as a key issue in SCM with a comparison between vertical and horizontal coordination levels to show the importance of IS in coordination and SCM. In the third section IS theory was explained by focusing on its barriers / challenges from the previous research. Lastly, the research gaps were formulated, in order to explore these barriers /challenges of IS at the horizontal level of SCM.

2.1 Introduction to supply chain management.

Supply chain management (SCM) was first introduced in 1980s (Arend & Wisner 2005; London & Kenley 2001; Cooper *et al* 1997, Oliver & Webber, 1992). The SCM was later described as: the systematic and strategic integration of business functions, from end user through original supplier, that add value to products, services and information for customers and other stakeholders (Mentzer *et al.*, 2001; Lambert *et al.*, 1998; Cooper *et al.*, 1997). It was developed from innovation concepts such as just in time (JIT) (Vrijhoef & Koskela, 2000) and total quality management (TQM) (Wong & Fung, 1999). Bhattacharya *et al*. (2014) defined SCM as“ the sober act of sharing materials, information which includes among other information, financial information within the organizational units as a way of meeting the customers’ needs and as result, this enhances the entire processes of supply chain management involved”. This study will adopt the definition by

Bhattacharya *et al*. (2014) since it includes coordination and information sharing among the supply chain members, which are the main focus of this thesis.

SCM has become the subject of increasing interest in recent years, to academics, consultants, practitioners and business management (Kilubi & Dietrich Haasis, 2015; Wong & Wong, 2007). They argue that the supply chain should be seen as the central unit of competitive analysis, while SCM is crucial to any firm for various reasons such as meeting the customers' requirements, improving operations, better outsourcing, increasing profits, enhancing customer satisfaction (Stevenson, 2002; Cox, 1997). The basic aims of SCM is to implement efficient and effective material and information flows (Lee *et al.*, 2000), leading to lower operation costs, better service reliability, profit maximization, decreased inventory level, better quality of life, reduced order cycle time and number of back orders, improved customer satisfaction and the overall competitive advantage (Bowersox *et al.*, 2010; Chuang & Shaw, 2000; Beamon, 1999; Cooper, & Ellram, 1993; Ellram, 1991).

Different scholars have studied SCM from different perspectives, including IS practices (Vanpoucke *et al.,* 2009 ; Cousins *et al.,* 2006 ; Mentzer, *et al.,* 2001; Lee *et al.,* 2000) , customer-supplier relationship (Johnson & Zineldin, 2003; Lambert & Pohlen 2001; Hoffman & Mehra, 2000; Harland, *et al.*, 1999), partnership and coordination issues (Frankel *et al.*, 2002 ; Horvath, 2001), performance measurement in supply chain (Azevdo *et al.,* 2011; Yang, 2009 ; Gunasekaran *et al.,* 2001;Tan *et al*., 1998), integration and collaboration (Simatupang & Sridharan, 2005; Monczka & Morgan, 1997), purchasing and supply activities, and transportation and logistics functions (Tan 2001; Christopher, 1998). However, The Council of Supply Chain Management Professionals (CSCMP) defined the SCM as:

"Supply chain management encompasses the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third party service providers, and customers. In essence, supply chain management integrates supply and demand management within and across companies" (CSCMP, 2014).

From this definition, it is important to recognize that SCM is a complex system that included many activities and different partners with different functions. Besides that, coordination and collaboration are main activities among channel partners of SCM. The benefit of looking at SCM is to provide a macro map to managers. The current study will focus on information sharing barriers and coordination issues across the the humanitarian supply chain in order to recommend strategies that can address the identified gaps.

SCM identifies an operational process that interacts with suppliers by ensuring that the required raw materials and information are available at all times during the production process. According to Lu *et al*., (2013), the SCM refers to operation management process that influences the interaction of the organization with the customer. The process seeks to ensure that the necessary and required raw materials are provided to the organization as required (Hoffman & Carl, 2012; Barbe, 2011; Barker & Santos, 2011; Duran *et al.,* 2011). Moreover, it ensures that the organization acquires high quality products that influence the viability of the operational process through the provision of products that meet the existent demand in the market (Aktar *et al.*, 2012).

From the humanitarian perspective, the SCM process ensures the required materials and services are provided to the affected populations during disasters (Dash *et al.*, 2013; Christopher & Tatham, 2011; Blecken, 2010 a, Chanders & Pache, 2010). The process remains instrumental in the humanitarian organization context as it influences the decision-making process attached to supply through the development of strategic, tactical and operational decisions vital for the logistical process (Bennett, 2014; Stroup, 2012). This in turn influences the development of effective strategies geared towards integration of informed decisions that enhance the viability of the overall process and effective supply process (Ergun *et al.*, 2014). Notably, this is critical to humanitarian logistics (HL) since it influences fast delivery of humanitarian supplies (.e.g. medical and food) to the affected populations and thereby saves lives (Dash *et al.*, 2013).

Coordination forms an important part of SC as it influences the development of viable relationships between various SC elements in the organizational context (Thomas & Kopczak, 2005). HSCM necessitates the integration of high levels of efficiency through enhanced levels of coordination (Akhtar *et al.*, 2012), including information-sharing, information technology, inventory, assessment, logistics, contracts, and joint decision-making (Fawcett *et al.*, 2008). Several factors delimit effective supply chain as they influence the development of enhanced structural coordination process and negative elements attached to the overall process (Maon *et al.*, 2009).

The HSC vary from CSC in different ways. For instance, the donor is considered as the customer by most NGOs and the supplies are influenced by external assessments of the beneficiaries' needs (Jahre & Jensen, 2009; Kovács & Spens, 2009; Mason *et al.*, 2007). Therefore, the evaluation capacity of HSC remains complex as the process necessitates the integration of an additional analysis geared towards determining whether the existent needs have been realized. By contrast, the end customer determines the product elements in commercial supply chains (Christoper; 1994).

Accurate and timely information sharing (IS) remains vital to HL since it influences the identification of the required supplies and delivery to beneficiaries, and enhances the overall humanitarian operations (Apte, 2010; Maon, *et al.*, 2009). IS influences unit valuation, which enhances the determination of whether the supplies have met the needs of beneficiaries. The feedback provided through the IS remains vital to the HSCM as it ensures engagement of donors with humanitarian organizations and responsive to the unmet needs (Dolinskaya, *et al.*, 2011; Apte, 2010; Fugate, *et al.*, 2006).

The HL is characterized with high demand unpredictability, including need identification that may eventually delimit delivery process during scarcity of resources (Arshinder *et al.*, 2008). Therefore, IS promotes increased level of productivity in supply chain management (Beske, 2012), and increased organizational efficiency as well as improved customer services (Hochrein *et al.*, 2015). Additionally, information sharing leads to building and strengthening of bonds between various actors (Lee *et al.*, 2008), early problem detection by the organizational management, quick response time both the customers and the workers, reduced time from the order of delivery in the supply chain and guarantees better product tracing and tracking within the supply chain (Dash, 2013). Furthermore, it supports open discussions since members can have forums online and discuss on areas to be improved thus improving on the organization’s standards.

Information sharing may be achieved through circulation across the SC (vertical integration level) during which various challenges and barriers arise (Albarune *et al.*, 2015, p.122). Such challenges include confidentiality of the information shared (Cantor, 2014), the reliability of the cost of the information being shared at a particular time (Dash, 2013), incentive issues concerning that particular process or rather the procedure of information sharing (Beske, 2012), the reliability and the cost of the information technology in place (Cantor, 2014), emerging issues of the anti-trust regulations (Beske, 2012, p.375), and the timeliness and accuracy of the information (Bhattacharya *et al.*, 2014). Based on the foregoing discussion, particularly the information sharing issues and the associated barriers, this research aimed to investigate the barriers that face information sharing between humanitarian organizations at horizontal level.

2.2 Humanitarian supply chain Management and business supply chain Management

2.2.1 Humanitarian SCM

Considering the humanitarian supply chain in the perspective of Council of Supply Chain Management Professionals [CSCMP] (2014), and the growing intrest as well as disasters across the world (Kovács & Spens, 2007, 2011; Apte, 2010; Tomasini & van Wassenhove, 2009a; Altay & Green, 2006), there is need to ensure that logistics provide the right material, at the right place, at the right time, for the right cost (Whiting & Ayala- Ostrom, 2009). Thus, the HSCM is inexorably judged by the general perception of its effectiveness to response to an emergency.

The UN World Food Programme (WFP) defines logistics as the range of activities encompassing preparedness, planning, procurement, transport, warehousing, tracking and tracing, and customs clearance. According to VanWassenhove (2006), HL is defined “as the process and systems involved in mobilizing people, resources, skills and knowledge to help vulnerable people affected by disaster’’ (p.475-489). Sources indicate that around 80% of the costs for relief operations consist of logistics costs in the form of procurement and transportation (Tomasini &Van Wassenhove, 2009a; Trunick, 2005). John & Ramesh (2012) stated that HSCM is critical to disaster relief operations as it ensures effectiveness, efficiency and speed in supplying beneficiaries with health, food, shelter, water, medicines and sanitation. This is achieved through managing the different factors in the system such as goods and materials, information, manpower, available infrastructure to reduce the impact of a disaster for the people who are affected.

Many organizations working independently with their own funding and systems to provide assistance for the affected people in these crisis face problems like overlapping, and some populations are not well served and prioritized in the pipeline (OCHA, 2007; Adinolfi *et al*., 2005). It is well established that the need for logistics planning and coordination in terms of planning, needs assessment, appeals, transport management and last-mile distribution (Rickard, 2003; Oloruntoba, 2005) are crucial elements. It has been recognized that, although the humanitarian logistics encompass very different operations at different times, these operations have the main aim of supporting people in the survival efforts (Santarelli *et al*., 2015). Based on Ernst (2003) defination, relief effort concerns with:

"A process of planning, managing and controlling the efficient flows of relief, information, and services from the points of origin to the points of destination to meet the urgent needs of the affected people"

On the other hand, Thomas & Kopczak (2005) defines HL "as the process of planning, implementing and controlling the efficient, cost-effective flow and storage of goods and materials, as well as related information, from the point of origin to the point of consumption for the purpose of alleviating the suffering of vulnerable people" (p.2). The author emphasizes that, the function encompasses a range of activities, including preparedness, planning, procurement, transport, warehousing, tracking and tracing, and customs clearance" (p. 2). This definition is the most common among several authors and corresponds with the general definitions of logistics management and SCM mentioned earlier by CSCMP (2014) with a special focus on "alleviating the suffering of vulnerable people".

Thomas & Kopczak' (2005) HL definition will be adopted in this research since it is compressive and captures the desired aspects which are of interest to the current study. Consequently, HL has an essential role to aid relief for several reasons. First, it is crucial to the effectiveness and speed of response for major humanitarian programmes – it does not matter how good a programme is, without the logistics support to deliver it to the right place at the right time it will fail (Beamon, 2004; Van Wassenhove 2006; Christopher & Tatham 2011; Oloruntoba & Gray, 2009). Second, with procurement and transport included in its function, logistics can be one of the most expensive and critical part of the relief effort. Third, the HL department is often the only repository of data that can be analysed to provide post-event learning; and fourth, the HL is a critical element as it focuses on the efficient and effective management of flows of goods, information and services, to respond to the urgent needs of the affected populations under emergency conditions.

HL emphasizes on managing the flow of goods, information and finances from donors to affected persons (save lives and reduce suffering of vulnerable people) such that can it go beyond profitability as required (Ernst, 2003).

2.2.2 Humanitarian supply network

There is broad range of actors involved in HL activities (Kovács & Spens, 2007). These include : donors, governments, the military, aid agencies, local and regional relief organizations, and private sector companies (Fig. 2-1), each of which may have different interests, mandates, culture, purposes, capacity, and logistics expertise (Balcik *et al*., 2010; Kovács & Spens, 2007).

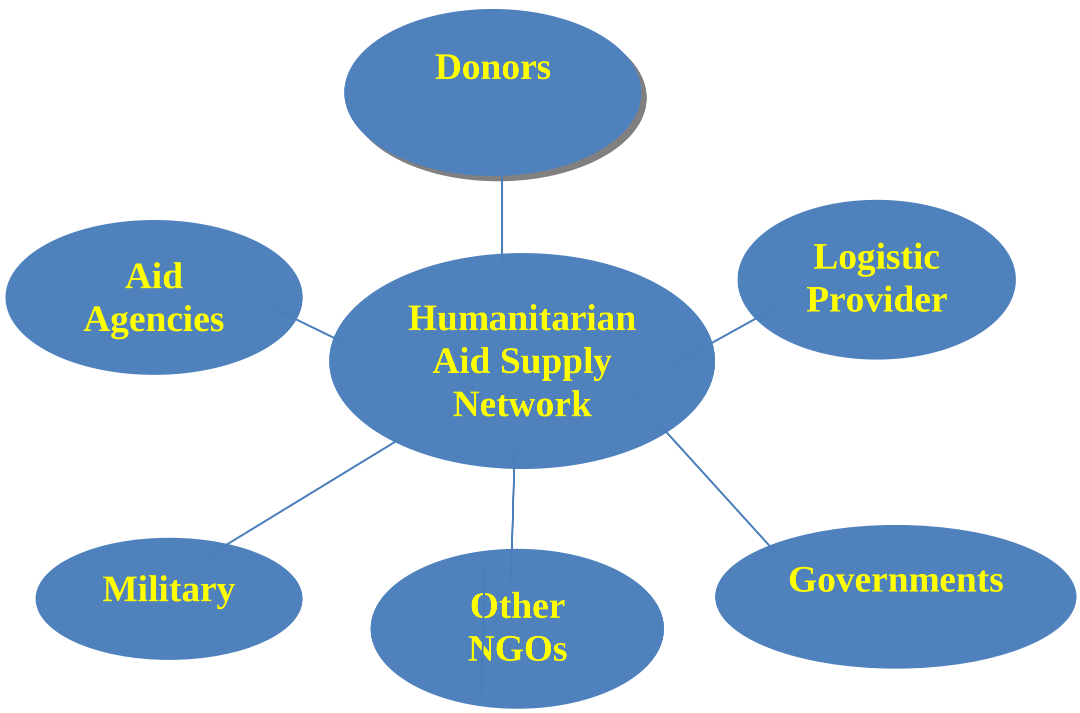


Figure (2-1): Actors in the supply network of humanitarian aid

Source: Kovács & Spens (2007).

Donors are important actors as they represent the sources of the bulk funding for the majority of relief activities (Kovács & Spens, 2007). Generally, the donations are either by giving financial means (in-cash donations) to support humanitarian operations or (in-kind donations) by providing goods / services for free while performing logistics operations. In addition to country-specific funding provided by governments (e.g. the USA and EU) in recent years, foundations, individual donors, and companies have become important sources of funds for aid agencies.

Governments, host governments, and other country governments within the international community are important actors as they are the activators of HL, since they have the power to authorize operations and mobilize resources. Host government authorization is fundamental for the involvement of other countries (neighbours or not) in the disaster theatre. The engagement of other countries depends on the relationship quality between the host government and the international community. Another important point in the aid process is the international agreements that subscribes between the host government and other countries (e.g., the European Union, North American Free Trade Agreement, Asia-Pacific Economic Cooperation, Arab League, African Union). Moreover, there is a responsibility put on the host governments to reduce the probability of disasters (mitigation) (host governments protocols and to take action).

On many occasions, the military has been a very important actor in providing primary assistance, for example, hospital and camp installation, communications, high planning and capabilities that were critical to Katrina relief operations logistics and planning (O¨ zdamar *et al.,* 2004).

Aid agencies are also important actors through which governments are able to alleviate the suffering of the affected people caused by disasters. In addition to the regional and country-specific aid agencies, the largest agencies are the global actors, such as the WFP. NGOs have a very important role in disaster relief, and their role could be operational by mobilising resources, in the form of financial donations or materials in order to sustain their projects and programs or advocacy by strengthening the donors' identification with the cause. For instants, CARE NGO which is a leading humanitarian organization that is fighting Global poverty. Some of these NGOs have temporary mission, being created just to address one particular crisis disaster (Cozzolino, 2012).

Logistics and other companies which represent the private sector are increasingly growing in the humanitarian relief environment, and some of these companies may have the donor's contributions role with supporting HL operations by giving financial aid (in cash). Others may have a collector role whereby a company gathers financial means from its customers, its employees, and its suppliers in order to fund aid operations. Provider player involves a company that offer its goods and services for free (in-kind donation) or as a consequence of a selling action.

Lieb *et al.* (1993) focus on the importance of logistics service providers and they define it as "*the use of external companies to perform logistics functions that have traditionally been performed within an organization. The functions performed can encompass the entire logistics process or selected activities within that process*". In the HSCM & logistics context, logistics service providers companies (LSP) have an essential contribution during the disaster-relief operation. For example, (DHL, FedEx) companies have the agility SC in terms of the resources, assets, and knowledge shared with their humanitarian counterparts. Thus, logistics companies are assumed as partners of humanitarian organizations. Again, companies have an essential contribution during different stages of the disaster, specifically after the disaster has occurred. Companies' aids may involve technological support, trained logistical staff, as electricity supply, engineering solutions (Cozzolino, 2012; Charles *et al.*, 2010; Jahre *et al.*, 2009; Oloruntoba & Gray 2006). As a result, HL is a critical element for the success of relief operation during and after natural or man-made disasters (Kunz & Reiner 2012; Sheu, 2007a) since they are concerned with an effective and efficient management of flows of goods, information and services, to respond to the urgent needs of vulnerable people.

Van Wassenhove (2006) emphasized on the effective and efficient SCM which enables humanitarian organizations to use the available resources, by matching the supplies they have with the most vulnerable people in the shortest time, taking into account the limited available funding. Thus, for an effective and efficient SCM, there is a need to manage the relationship between disaster relief actors, coordination and communication among various actors that must be involved (Davis *et al*., 2011, 2013; Akhtar *et al.*, 2012 ; Cozzolino, 2012 ; Kovács & Spens, 2009) to ensure continuous improvement like performance measurement system (Blecken *et al.*, 2009; Beamon & Balcik, 2008).

2.2.3 Humanitarian versus Commercial SCM

According to Maon *et al.* (2009), the key SCM processes such as demand management, fulfilment management and supply management, used in the restructuring and analysis of business logistics also apply in humanitarian supply chain logistics. Although business and humanitarian supply chains, according to (Swaminathan & Tayur, 2003), are similar in regards to logistics activities such as the physical flow of products to the end user, the strategic goal of both chains are different as presented in Appendix (1) . For example, the strategic goal for business supply chains is to increase production at low costs so as to maximize profitability while ensuring customer satisfaction (Moore ,2000). Moreover, commercial or (business) logistics which is a part of SCM is concerned with managing the flow of goods, information and finances from the point of origin to the point of consumption in order to meet customers' requirements (demand satisfaction) (CSCMP, 2014).

On the other hand, the HSCM, the ultimate goal is to save lives and reduce human suffering rather than profit maximization, given financial constraints (Day *et al.*, 2012; Kovàcs & Spens 2007; Van Wassenhove, 2006). The demand pattern of business supply chains occurs at fixed locations with varying characteristics and is relatively predictable in addition to being stable (Decker *et al* 2013; Moore ,2000).However, for HSCM, the demand is relatively unpredictable as it is generated from random events that provide for uncertainty (Beamon & Balcik, 2008; Murray, 2005; Cassidy, 2003). Additionally, and as stated by Oloruntoba & Gray (2006), there is an inadequate link between long-term aid development and emergency aid.

According to Cozzolino (2012) and Tomasini & Van Wassenhove (2009a), the key actors and stakeholders in any disaster relief operation often display varying heterogeneous degrees in relation to culture, interests, mandates, capacity, purposes and logistical background. Basically, the actors and stakeholders, including governments, which may include both host and neighbouring external governments, the international community, aid agencies, the military, private sector organizations, and non-governmental organizations (Cozzolino, 2012; Tomasini &Van Wassenhove, 2009a). Therefore, the coordination of many different aid agencies, suppliers, and local and regional actors, all with their own ways of operating and own structures can be very challenging (Long & Wood, 1995: p. 213-229). For instance over 40 countries and 700 non-governmental organizations (NGOs) provided humanitarian assistance following the 2004 Asian Tsunami (Chia, 2007). As such, there have been few coordination successes in the inherently chaotic relief environment and the large number and variety of actors involved in disaster relief (Fenton, 2003).

2.2.4 The phases of disaster relief operations

Long (1997) and Nisha de Silva (2001) described disaster management as a process with several stages. Van Wassenhove (2006) defines "*disaster*" as "*a disruption that physically affects a system as a whole and threatens its priorities and goals*" (p.475-489). The author also differentiates between sudden-onset and slow-onset of natural and man-made disasters as shown in table (2-1).

Table (2-1): Types of disasters

	Natural	**Man-made**
Sudden-onset	Earthquake Hurricane Tornadoes	Terrorist Attack Coup d' Etat Chemical leak
Slow-onset	Famine Drought Poverty	Political Crisis Refugee Crisis

Source: Van Wassenhove (2006)

Relief is defined by Long & Wood (1995) as a "foreign intervention into a society with the intention of helping local citizens" (p. 213). So that, the focus of disaster relief operations as described by Barbarosogˇlu *et al*. (2002) is to "design the transportation of first aid material, food, equipment, and rescue personnel from supply points to a large number of destination nodes geographically scattered over the disaster region and the evacuation and transfer of people affected by the disaster to the health care centres safely and very rapidly" (p. 118).

HL aims to alleviate peoples' suffering in a disaster. Consistent to this view, Kovács & Spens (2007) described two main streams of HL, which are continuous aid work in manmade disaster, and disaster relief in sudden catastrophes such as natural disasters (Kovács & Spens, 2007). In disaster management, Lee & Zbinden (2003) discuss three phases for the operations of humanitarian organizations, the phases of preparedness, during operations, and post-operations. Kovács & Spens (2007) identified three different phases within disaster relief operations as preparation phase, immediate response phase and reconstruction phase (Fig. 2-2).

Figure (2-2): Phases of Disaster Relief Operations

Source: Kovács & Spens (2007)

- Preparation phase

This phase involves equipping different analytical units (i.e. individuals, households, organizations as well as communities, and societies) with measures that enable them to respond effectively to disasters occurrence and recover more quickly. This is aimed to address the unpredictable nature of disasters despite their damaging effects (Kovács & Spens, 2007). However, most humanitarian actors are not adequately prepared since donors insist that their money be used to help victims and not to finance back-office operations, suggesting that .preparedness efforts and training are often neglected (Murray, 2005). The situation is complicated by lack of coordination (Murray, 2005).

Based on the crucial role for the preparation phase, various operations are needed before a disaster strikes such as coordinating operations, and training relief staff, strong relationships between actors and strategic plans can also be developed (Nikbakhsh & Farahani, 2011; Thomas, 2003; Long, 1997). According to Fawcett *et al. (*2011), the preparedness for an emergency disaster by the humanitarian organizations depends on the pre-positioning of supplies. Thus, humanitarian organizations take into consideration the importance of integration between them for an effective humanitarian logistics information sharing. This integration will influence the assessment and recording of urgent supplies for the affected people in time of disasters (Jahre & Jensen, 2009; Fugate *et al.*, 2006). Transportation and vehicle routing are also vital for emergency situations (Balcik *et al*., 2010; O ̈ zdamar *et al*., 2004; Barbarosogˇlu *et al*., 2002). Logistical support is required especially in prevention and evacuation-related measures before a disaster strikes. Besides that, in instant medical and food relief procedures once a disaster strikes (Kovács & Spens, 2007). Notably, effective information sharing process will have a deep impact on the supply process.

- Response phase

The response phase occurs immediately after a disaster strikes, the emergency plans of regional actors then come to action and their primary activities are focused on saving lives and preventing more damage (Kovács & Spens, 2007). During this phase, logistics forms the core element of the humanitarian operations in the distribution of food, medical supplies and other necessities of life to the beneficiaries, and lives of the affected population will be dependent on the speed of logistics activities (Howden, 2009: p. 45-123). In spite of the actor's prepared plans, they need to operate in an environment with a destabilized infrastructure (Cassidy, 2003; Murray, 2005). Moreover, if the disaster strikes less developed areas, the challenges to the immediate response phase for the humanitarian efforts will be greater regarding the assumptions for the kind of supplies needed, times and locations of demand , the distribution of supplies to any point of demand as a result of very limited information (Long & Wood, 1995).

However, the main problems facing the immediate response phase lie in coordinating supplies needed in unpredictable demand conditions and the last mile problem of transporting necessary items to beneficiaries (Ozdamar *et al.*, 2004; Beamon, 2004; Long & Wood, 1995). Since these problems were studied mainly using quantitative approaches (Tzeng *et al.*, 2007; Yi & Kumar, 2007), there is a need for more qualitative research that focuses on the immediate response phase as emphasized by Kovács & Spens (2008).Moreover, integrating effective information sharing through timely and accurate information in the response phase of natural and man made disaster will reduce the level of duplicate entries (Haddow *et al.*, 2013; Apte, 2010) and enhance effective and efficient disaster response process. Furthermore, it influences the maintenance of warehouse inventory reports, which limits poor utilization of surplus stock pertaining to emergency response.

- The reconstruction /Recovery phase

This phase encompasses different activities of long-term rehabilitation, including financial assistance to individuals and governments, training people, distributing supplies for beneficiaries, reconstructing houses that may be carried out over a period of months to years (Kovács & Spens 2007; Maon 2009; Nikbakhsh & Farahani, 2011). Notwithstanding the critical role of reconstruction, funding is often focussed on short-term rather than long-term disaster relief response (Kovács & Spens, 2007; Gustavsson, 2003). Moreover, HL streams the transition between the different phases which shifts the focus from speed to cost reduction. Therefore, the SC agility and leanness principles of “the ability to respond to unexpected changes” (Sheffi, 2005; Towill & Christopher 2002; Mason-Jones *et al*., 2000; Naylor *et al.,* 1999) and “to doing more and better with less when demand is relatively stable and predictable” (Childerhouse & Towill, 2000; Towill & Christopher, 2002; Mason-Jones *et al*., 2000) can be applied according to the phase type (Cozzolino *et al*., 2012) respectively (Tomasini & Van Wassanhove, 2009b).

Since recovery phase occurs in a longer period in comparison to the other phases, it influences the provision of the required length of time to ensure that the existent conditions stabilize while influencing the availability of the necessary funds for humanitarian organizations. The process influences strategic planning based on the available resources and information provided. Through the integration of information systems influences, the staff involvement enhance the process which eventually influences the identification of the lacking areas pertaining to the overall process and their integration in the information systems process (Haddow *et al.*, 2013; Apte, 2010; Maon *et al.*, 2009). Therefore having a recovery phase in place with effective information sharing and coordination based on effective strategic planning, information sharing and involvement of all stakeholders promotes timely and effective response action to addressing the needs of the affected population such as in the refugees' crisis and other related disasters. This study will recommend strategies that could be integrated in HSCM to ensure effective response and improved performance among humanitarian organizations.

2.3 Coordination in HSCM

2.3.1 General overview of coordination

Coordination has become instrumental to humanitarian organizations as successful coordination efforts remain paramount in the identification of improved outcomes for the communities they seek to serve (Jahre & Jensen, 2009). However, the operating environment encountered by the majority of NGOs delimits the development of effective operation relationships, which adversely impact on broad and open cooperation (Balcik *et al.*, 2010). Lack of proper coordination remains influenced by a number of factors. First, the lack of information sharing among many international NGOs relies on donations to provide their services to the affected populations (Heaslip, 2012;

Hoberg & Floethmann, 2012:p. 61; Hoffman & Carl 2012; Ellis 2011; Blecken, 2010a). Scarcity of donors also influences the development of a competitive atmosphere, which delimits effective cooperation and coordination experienced among the supply chain actors (Balcik *et al.,* 2010). Second, the majority of NGOs seek to ensure that they remain the first agencies to provide assistance during crisis, which delimits the integration of information with coordination activities among the agencies (Akhtar *et al.*, 2012; Dolinskaya, *et al.*, 2011).

Balcik *et al.* (2010) maintains that the organizations face numerous challenges as periods of crisis provide a chaotic atmosphere, which delimits the level of information coordination experienced among humanitarian NGOs (Day, *et al.,* 2012). According to Dolinskaya, *et al*., (2011), development of coordination between NGOs remains instrumental to influence efficient humanitarian response by actors. Therefore the current situation necessitates the integration of an in-depth IS analysis with coordination of the humanitarian efforts across the SC partners.
Although there are several definition of the term coordination, there is need to ensure humanitarian NGOs have good knowledge base in this area (Akhtar, *et al.,* 2012; Banomyong, 2012; Barker & Santos, 2011). The majority of the broad definitions maintain that coordination refers to the integration of combined efforts regarding certain goals by diverse organizations (Apte, 2010; Blacik *et al.,* 2010; Tomassin & Van Wassenhove, 2009; Fawcett, *et al.,* 2008). Coordination is also defined as the integration of relationships among NGOs operating in similar conditions and geared towards influencing the efficiency levels attached to the provision of services (Balcik *et al.,* 2010). The latter definition emphasize that the coordination process seeks to unite two or more humanitarian NGOs to coordinate their efforts and activities to meet a mutual goal (Dash, *et al.,*

2013; Akhtar, *et al.*, 2012 ; Sandwell, 2011; Cruijssen, *et al* 2007 ;Tomasini & Van Wassenhoe, 2004).

Coordination process involves the integration of an effective operational framework that seeks to utilize existing resources in an efficient manner to achieve humanitarian objectives (Lu *et al.*, 2013; Arshinder, *et al.*, 2008). Conclusive operational framework facilitates the development of an operational structure, which allows break down of operational processes and thereby influence task distribution between organizations (Dash, *et al.*, 2013; Sandwell, 2011; Cruijssen, *et al.*, 2007). This is particularly critical where varied humanitarian organs remained tasked with the duty of integrating specific programs as assigned through the developed coordination efforts (Bennett, 2014; Heaslip, *et al.*, 2012; Stroup, 2012). The efforts render the humanitarian process effective and efficient to influence the overall humanitarian operational process (Mason *et al.*, 2007).
However, the existence of diverse players in the HSC may delimit the integration of effective coordination processes since developing an effective framework is compounded by the existing challenges (Bennet, 2014; Lu *et al.,* 2013; Stroup, 2012; Gustavsson, 2003). Moreover, most humanitarian NGOs face the challenge of developing effective SC coordination practices. Consequently, this affects development of essential processes for analysing the most effective coordination methods that may be implemented to control developing interdependencies at organizational or department levels (Tapia, *et al.,* 2012; Feton, 2003).

Coordination is considered core to the humanitarian SC since it seeks to meet the supply needs of the affected populations (Bennet, 2014; Moshtari & Goncalves, 2012; Stroup, 2012, p. 250-354; Balcik *et al*., 2010). Arshinder *et al*. (2008) maintains that the SC integrates numerous activities, which have the capability of developing numerous complexities that delimit the overall process through the development of challenges for the coordination process (Akhtar, *et al.,* 2012). The potential challenges relating to the development of an efficient coordination and logistical process through IS necessitates the need for the development of intricate coordination efforts that remain significant in the development of concrete structures that maintain high levels of independence and operational capacity (Dangi, *et al.,* 2012; Charles *et al*., 2010; Jaher & Jensen 2009). Therefore, the coordination process emphasizes the structural development that seeks to influence effective IS, resource-sharing structure, maintain effective decision making, sustainable control and risk/reward sharing processes (Duran, *et al.,* 2011; Hoffman & Carl, 2012; Ellis, 2011; Arshinder, *et al.,* 2008).

Blecken (2010a), therefore, argues that the type of mechanism selected remains dependent on the humanitarian organization to ensure development of a process that emphasizes bare minimum risk-cost (Bennett, 2014 ;Sandwell, 2011 ; Schulz & Blecken, 2010). Fugate *et al.* (2006) maintains that coordination develops a vital element of the organizational process as it seeks to bring together different entities and organizations in the operational process, which remains instrumental to humanitarian activities and supply chain processes (Dash, *et al.,* 2013 ; Akhtar, *et al.,* 2012: Sandwell, 2011; Cruijssen *et al*., 2007).

2.3.2 Definitions of Coordination in Humanitarian Relief

Akhtar *et al.*, (2012) defines coordination as a systematic process that influences the provision and utilization of humanitarian resources efficiently and effectively through increased coordination among humanitarian NGOs pertaining to the humanitarian crisis. Cao *et al*. (2008) develops on Akhtar's definition by maintaining that coordination influences the development of partnerships among humanitarian NGOs geared towards influencing the coordination activities relation to relief supply to the affected populations. Coordination integrates numerous interpretations in the relief and humanitarian environment as it inculcates numerous aspects. These include information sharing, regional division of tasks, which may be enhanced through the development of a cluster-based system that remains representative of varied sector areas including health, food and the medical aspects necessary (Charkavarty, 2011; Overstreet *et al.* 2011). High level IS constitutes a core element of coordination process (Lu *et al.* (2013), and may be effectively relayed through the channels that speed delivery of humanitarian services (Lu *et al*., 2013, Cozzolino, *et al.*, 2012).

Despite the existing differences in terminologies and definition, the humanitarian community has integrated numerous processes geared towards influencing the coordination processes adopted by individuals in the sector. Dolinskaya *et al.* (2011) maintains that the coordination process experienced among NGOs seeks to influence the development of a viable link in the supply process geared towards ensuring efficient supply of the humanitarian goods from store houses to the affected populations. According to Mclahlin & Larson (2011), coordination process remains instrumental among humanitarian NGOs as it influences the supply process through the integration of effective information sharing processes.

2.3.3 Importance of Coordination in Humanitarian Relief

The relief environment remains influenced by the existent of numerous actors who influence the operational process of humanitarian relief (Dash, *et al*., 2013; Akhtar, *et al*, 2012 ; Sandwell, 2011; Tomasini &Van Wassenhoe, 2004). The existence of numerous actors in the relief environment influences the development of effective relief efforts relating to the operational capacity of humanitarian and relief efforts (Blacik *et al.*, 2010). Furthermore, coordination influences the development of effective humanitarian operations among NGOs as it delimits the level of chaos experienced through increased logistical cooperation influenced by the existence of intricate IS processes (Balcik *et al.,* 2010). Additionally, coordination influences the decision-making process experienced in the relief supply chain as the process influences the information-sharing capacity among humanitarian NGOs, which influences the integration of informed decisions relating to the overall process (Akhtar, *et al.,* 2012). Coordination influences the supply chain efficiency levels through provision of necessary information in all the supply processes and the associated process (Dash, *et al.*, 2013; Akhtar *et al.*, 2012; Cruijssen, *et al.*, 2007; Tomasini & Van Wassenhoe 2004). The development and maintenance of effective coordination practices is important for effective operation of the overall relief efforts (Ergun, *et al.*, 2014, Arshinder *et al.,* 2008).

2.3.4 Types of Coordination in SCM

There are generally two main types of coordination in SCM: vertical and horizontal coordination (Schulz & Blecken 2010; Jeffers *et al.,* 2008; Cruijssen *et al.,* 2007; Johnston *et al*., 2004).

- **Vertical Coordination versus Horizontal Coordination**

Vertical coordination refers to the extent in which an organization integrates effective coordination of the existent upstream and downstream activities (Schulz & Blecken 2010). For instance, the development of a coordination relationship between an NGO and a transportation company that remains geared towards influencing the transportation processes incurred by the NGO. Upstream activities incorporate the service elements within the organizational activities and processes (Bagchi, *et al.,* 2011; Besiou, *et al.,* 2011). They comprise of activities such as supply where the organization is tasked with the responsibility of ensuring that the supplies and modes of operation it possesses at any one time are adequate (Mason *et al.,* 2007). This requires efficiency to ensure mentainance of ideal relationships between the suppliers and the organization (Cruijssen, *et al.*, 2007; Berger & Gattorna, 2001). Downstream activities remain essential for all organizations as they contribute towards identifying the existent needs of the affected populations (Zhang *et al*., 2011).

Horizontal coordination refers to the level of coordination experienced between an organization and other organizations on the same level in the supply chain process (Arshinder, *et al.*, 2008). This process influences the level of information sharing across the SC partners through the development of effective operational processes (Bennett, 2014). Moreover, effective processes allow organizations to enhance efficiency levels during disbursement of humanitarian aid (Stroup, 2012). For instance, horizontal coordination may be experienced in an instance whereby one NGO coordinated with another NGO to influence the provision of relief goods and services. Therefore, horizontal coordination identifies the collaboration process that involves the coordination humanitarian response between two or more NGOs (Schulz & Blecken, 2010).

The coordination process experienced in vertical coordination influences the provision of the resources and information to similar populations (Arshinder, *et al.,* 2008). The identified form of coordination remains common among national and local authorities together with state organizations. In the event of an NGO and a transportation company involvement in the transportation process, the aim of the coordination seeks to ensure that the humanitarian responses are identified in a more efficient manner (Schulz & Belcken, 2010). The process influences the development of vital links with local authorities regarding the process and thereby information exchange. However, the level of coordination may be limited at the national level by lack of the necessary resources and experiences (Cruijssen, *et al.,* 2007).

By contrast, horizontal coordination may influence the development of high levels of competition among humanitarian supply chain partners (Bennett, 2014). Kovács & Spens (2009) maintains that horizontal coordination influences the level of information sharing experienced among humanitarian NGOs especially in the SC due to the level of efficiency and effectiveness associated with it. The process influences the development of coordinated efforts geared towards the provision of the stipulated needs of the affected populations (Akhtar *et al.*, 2012). Additionally, horizontal coordination influences the humanitarian operations in time of crisis as they influence the information-sharing processes between different organizations and governments that enhance the supply efforts through the provision of the required information (Akthar *et al.,* 2012).

Generally, vertical coordination has been well-examined in supply chain management literature (Johnston & Kristal 2008; Van Der Vaart & Van Donk 2008 ;Cruijssen *et al*. 2007; Benton & Maloni 2005; Johnston, *et al*., 2004), and information sharing is the main tool for effective coordination between organizations (Cao *et al*., , 2008) . By contrast, the academic research addressing the horizontal coordination in supply chain management is very limited (Verstrepen, *et al.*, 2009; Oh & Rhee 2008; Cruijssen, *et al*., 2007). In other words, Pomponi *et al.* (2015) described horizontal collaboration in SCM as a neglected topic and the related literature is still in its infancy.

2.4 Information Sharing

According to Ma (2011: p 876), supply chain IS constitutes an activity that facilitates communication between partners on aspects regarding "demand, shipping, inventory and cash flow" with the purpose of optimizing inventory, quick response, and reducing the total costs for gaining increased core competitiveness. IS forms the cornerstone of a number of SCM initiatives such as collaborative planning and efficient consumer response (ECR) (Cho *et al.*, 2012; Lee *et al.*, 2000). Apart from material and finance, information is another important flow of SCM, a vital element for SC integration (Sahin & Robinson, 2002) and critical for SC performance improvement (Li *et al*., 2006; Hult *et al.*, 2004; Mentzer *et al*., 2001).

IS provides the required data for the SCM to make decisions (Ma, 2011), and it represents the main tool for coordination, connecting the members of the SC through various available technologies (Choi, 2010). IS forms a critical aspect for effective SC coordination (Nyaga *et al*., 2010:p.101; Sahin & Robinson, 2002). Moreover, IS and coordination during inter-agency response also improve the effectiveness of response (Van Wassenhove, 2006). Therefore, with proper information collection and sharing across responding organizations, relief capacities strengthen as a result of effective coordination and response (Thevenaz & Resodihardjo, 2010). Thus, the UN's humanitarian coordination and response structure create a systemic capability to make sure there is a coordinated response through the facilitation of IS (OCHA 2006; Adinolfi *et al*., 2005).

Successful coordination is characterised with proper communication among various actors. Therefore, humanitarian organizations develop various systems to ensure they meet demands of those in need, including IS that fosters efficient supply chain (Marshall, 2015). IS among the actors offers various benefits such as easy decision making process during disaster response (Wakolbinger *et al*., 2013); creates good relation across the SC; supports open discussions through online forums. It is therefore imperative for professionals to share relevant and timely information (Scholten *et al.*, 2010) so as to promote transparency, accountability and trustworthiness (Schulz

& Blecken, 2010). Evidently, IS phenomenon is the key factor for coordination in humanitarian organization. This study will explore the dimensions of information sharing in HSCM (i.e. what are the barriers or challenges facing IS) that have an impact on effective horizontal coordination in humanitarian organization in Jordan. The following section discusses four important issues or themes of IS in business SC: concept, types and sharing methods and benefits of IS among the SC actors.

SCM IS provides the required data for some entities (people, systems, or organizational units) in an open environment (Ma, 2011 ; Mclachlin & Larson , 2011), and allows the SCM actors to coordinate, and use more timely and accurate information to better organization and supply chain performance (Chen *et al.*, 2008; Fung *et al.*, 2007; Huang *et al.*, 2003). Therefore, numerous definitions exist in IS theory as shown in table (2-2). Although sharing of information is crucial element in BSCM, information management and exchange is a core activity in coordination between many organizations that provide humanitarian aid during crisis and natural disaster (Jahre & Jensen, 2009). This may apply to immediate response to a disaster or in subsequent periods during which it is almost impossible for a single organization to fulfil the needs of people affected. Therefore, these organizations need to build trust and commitments among them in order to share information timely and accurately, relevant experience and education, relationship management and performance measurement (Kaplan & Norton, 2008; Narayanan & Raman, 2004; Kale *et al*., 2001). However, there is lack of studies on the importance and understanding of IS phenomenon between HSCM actors which influence effective response to beneficiaries (Leiras *et al.*, 2014 ; Kunz &Reiner 2012; Caunhye *et al.*, 2012 ; Day *et al.*, 2009 ; Spens and Kovács, 2009; Howden, 2009; Kovács & Spens 2007 ; Barrat, 2004; Mentzer,2004 ; Bhaskaran,1998). Therefore, this research seeks to explore the information sharing phenomenon in depth, focusing on the barriers of IS that lead to an ineffective response.

Table (2-2): Definitions for IS

Author	year	Definitions
International Network for Development Information Exchange	(2000)	Sharing information on their activities is one way in which agencies can save money and time, by avoiding duplication of efforts achieved elsewhere, and helping them to find partners with whom they can pool funds and expertise
Mentzer *et al*.	(2001)	The willingness to make strategic and tactical data available to other members of the supply chain
Handfield *et al*.	(2004)	Information visibility within the SC as the process of sharing critical data required to manage the flow of products, services, and information in real time between suppliers and customers
Rai *et al*.	(2006)	The extent to which operational, tactical and strategic information are shared between a focal firm and its supply chain partners
Hsu *et al.*	(2008)	The extent to which crucial and/or proprietary information on the tactical and strategic level is available to members of the supply chain
Cao *et al*.	(2010)	The extent to which an organization shares a variety of relevant, accurate, complete and confidential ideas, plans, and procedures with its supply chain partners in a timely manner
Wiengarten *et al.*	(2010)	The act of capturing and disseminating timely and relevant information for decision makers to plan and control supply chain operations
Kumar & Pugazhendhi	(2012)	Information sharing in supply chain context refers to the extents to which crucial information is available to members in the supply chain.
Lotfi *et al*.	(2013)	Information sharing means distributing useful information for systems, people or organizational units.

Effective IS process should address four important questions: first, why (not) to share information (the value of information sharing); second, types of information sharing (what information to share and with whom); third, methods of information sharing ((how and when to share information), and fourth, the barriers or drivers of sharing information (Kembro *et al* 2014; Lotfi *et al.,* 2013; Raghunathan, 2003).

2.4.1 The Value of Information Sharing

IS aims to achieve efficiency in the whole supply chain (Kumar *et al*, 2012). It provides the mechanism for coordination and integration of the processes or activities along the supply chain to ensure that customer needs are fulfilled (Omar *et al.*, 2010 ; Lee *et al.*, 2000). Many researchers concluded that IS leads to improved performance in supply chains either direct or mediating(Prajogo & Olhager, 2012; Hsu *et al.*, 2008 ; Forslund & Jonsson, 2007; Carr & Kaynak, 2007; Vereecke & Muylle, 2006; McCarthy & Golicic, 2002; Gustin *et al.,* 1995). Other sources indicate that IS, joint relationship effort, and dedicated investments lead to trust and commitment. Trust and commitment, in turn, lead to improved satisfaction and performance (Nyaga *et al.*, 2010, p. 101).

IS with the supplier can significantly affect SC performance and reduce costs (Zhao *et al*., 2002). There is a positive relationship between IS and SC operation: higher level of information sharing is associated with lower total cost and shorter order cycle time (Lin *et al*., 2002; Zhou *et al.,* 2014). Kulp *et al.,* (2004) demonstrated that the highest organizations profit will be achieved by combining both IS and coordination. IS helps supply chain members to build and strengthen relationships and social ties among them to ensure increased ability and willingness to communicate and share information with other members, and significant reduction of uncertainties (Bagchi & Larsen 2004).

Furthermore, IS leads to increased SCM productivity (Beske, 2012); organizational efficiency and improved customer services (Hochrein *et al.*, 2015, p.242); and optimized capacity for resources and competencies utilization (Zhao *et al*., 2011, p.37**).** According to Lee *et al.* (2008**)**, the shared information builds and strengthens relationships and social ties among the information receivers and givers. SC members with more ability and willingness to share information among themselves may significantly reduce uncertainties (Ding *et al*., 2011, p.73). Also, IS ensures availability of more information among SC partners to ensure improved visibility, alter existing plans or formulate future operations, including accurate predictions and quick customers response based on real demand (Li & Gao, 2011; Fiala 2005; Li *et al.*, 2001; Lee & Whang, 2000). IS improves information quality and information processing capabilities of all SC partners which facilitates uncertainties management around the partnerships and the external environment (Wong *et al.*, 2015).

Generally, information should be shared at different organizational levels (Wadhwa & Saxena, 2007) and with different benefits and returns among SC members (Cachon & Fisher 2000; Yu *et al*., 2010 ; 2001, Li *et al* 2001; Lee *et al* 2004; Fiala 2005 ;Cheng & Wu 2005; Li &Y, 2011). Nevertheless, organizations must understand what type of information to be shared with other partners, which members are critical to the success of the organization and the SC, how far and when the information should be shared. This is important since it ensures that the supply chain partners enforce measures to address any barrier to information sharing, including risky behaviours like opportunism to ensure fair and equitable benefits sharing.

2.4.2 Information Sharing Types.

SC information type can be classified into strategic, tactical and operational information (Mentzer 2004; Baihaqi *et al*., 2008). On the strategic level, companies share one-year forecasts, facility allocations strategies exploring IS (Mentzer *et al.*, 2001) to enable effective planning of future purchases and growth within the alliance (Mohr & Spekman, 1994). Production, distribution planning, capacity and inventory allocation, and safety stock as tactical information shared in SCM to reduce inventory levels , improve reliability of shipments to downstream partners, lower operating costs, higher productivity and improved planning of production for all SC partners (Bowersox *et al.*, 2000; Patnayakuni *et al.*, 2006; Klein & Rai, 2009 , Ramanathan, 2012). On the other hand, the order replenishment and shipment information are categorized as SC operational information (Huang *et al*., 2003). Besides, Huang *et al*. (2003) classified SC information based on product, process, resource, inventory, order, and planning.

However, organizations are normally tasked to answer four main questions that pertain to IS within organizations: what particular information they should share among themselves (Oloruntoba & Kovács, 2015). The quality of answers usually received from such a question will help the organization avoid redundancy, reduces the sharing of costs and of course improve responses. In this regard, SC is characterised with various information types such as logistics information, business information, strategic information, tactical information and other forms of information that come along with the entire SCM process (Larson & Rogers 1998). Other types of information cited in the literature include demand and inventory information ,operational and strategic information, forecasting information , order information and production information (product, process, resources such as capacity, and capability , inventory, planning and the status of performance such as time, quality, costs, and flexibility) (Ramayah & Omer, 2010; Lee *et al* 2004; Huang *et al.,* 2003; Moberg *et al.,* 2002; Lau *et al.,* 2002; Li *et al.,* 2001; Yu *et al.,* 2001; Cachon & Fisher, 2000; Chen *et al.,* 2000; Lee *et al.,* 2000).

Furthermore, strategic IS encompasses long term issues in organization strategies such logistics strategies and strategic information which must be communicated timely and accurately to affects all the strategies of the SC partners (Moberg *et al*., 2002). Sharing demand information can lead to saving cost and reduced inventory level of the manufacturer organization and enhance the efficiency in SC since the uncertainties in demand are decreased (Lee *et al*., 2000). Moreover, Zhang *et al.,* (2006) concluded that when SC members share shipment information it can help them to adjust their ordering policy.

Since HSCM and logistics literature are scant or even in its infancy (Leiras *et al*., 2014; Overstreet *et al*. 2011; Tatham *et al.,* 2009; Kovács & Spens, 2007), there is generally lack of previous studies of IS among organizations, particularly in humanitarian context and its importance in coordination and relief SC performance. Therefore, there is an urgent need for more empirical research to create an IS chain that enables better horizontal coordination in supply chain members as well as the HSCM actors (Leiras *et al.,* 2014; Caunhye *et al.,* 2012; Kunz & Reiner 2012; Overstreet *et al.*, 2011; Natarajarathinam *et al*., 2009; Petit & Bresford, 2009; Kovács & Spens 2007; Atlay & Green III 2006). In addition Overstreet, *et al*. (2011) argued that the IS constitutes a fertile research area in humanitarian sector to enhance IS among humanitarian organizations actors (Howden, 2009; Spens & Kovács, 2009; Van Wassenhove, 2006). This study will explore barriers to effective IS in humanitarian SC, types of information shared and how IS and coordination may influence the overall SC performance.

2.4.3 Methods of Information Sharing

IS encompasses activities that distribute useful information between multiple entities (people, systems, or organizational units) in an open environment (Sun & Yen, 2005). This ensures rich information availability (Williams & Moore, 2007; Lee & Whang, 2000) and consequently higher possibilities for improving forecast and better demand estimate and planning. Accordingly, IS employ various methods, including face-to-face contact, telephone and fax events, newsletters, workshops as well as email, electronic data exchange (EDI) and the Internet, Web-enabled portals, enterprise resource planning and data warehouse management (Rai *et al.*, 2012; Ambrose *et al.*, 2008; Adewole, 2005; Hill & Scudder, 2002; Stevenson, 2002).

IS methods may be determined by the SC structure. Rong & Kumar (2003) classify information sharing on the basis of SC structure into: sequential, reciprocal, and hub-and-spoke (Table 2-3).

1- Sequential information sharing: This structure involves information sharing in a way that links the collaborative processes together into a sequential chain. The output of one partner's activity will flow into the next trading partner as its input. This is the simplest arrangement to implement. Each pair of partners could rely on Electronic data interchange (EDI) or some other communication mechanisms.

2- Reciprocal IS: This involves information flow in a bi-directional way, and each partner may communicate with several others so that, inconsistencies can arise in the information shared with different partners. These could be reduced through synchronized and integrative interactive processes ensure the best coordination mechanism for partners.

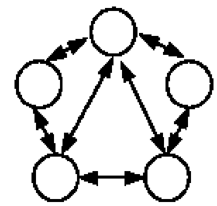
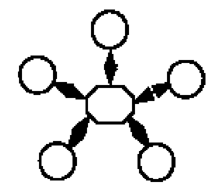
Information Sharing	Sequential	Reciprocal	Hub-and-Spoke
Structure			
Level of collaboration	Between neighboring partners only (one-way)	Two-way, multiple partners	Two-way, centralized
Coordination Mechanism	Information flow upstream, goods downstream	Multiple information flows	Intelligent hub
Technologies	EDI	Networking, email, videoconference	Web services
Examples	Traditional supply chain, 3PL	VMI	CPFR, Private Trading Exchanges, Consortia Trading Exchanges

Table (2-3): Information Sharing Structure .

Source: Rong & Kumar (2003).

3-Hub-and-spoke IS: This structure is based on a central hub that communicates with all partners, and provides the SC with an electronic marketplace to facilitate interactions between partners.

Many researcher focus on information technology as an important issue in SC and IS (Rabren, 2010; Fawcett *et al*., 2009; Zhang *et al*., 2006; Sander & Premus, 2005; Raghunathan, 2003). Others emphasize that the organizational cultures of willing and able to share information are more vital; and technology becomes a tool to augment and promote IS (Rashed *et al.*, 2010; Fawcett *et al*., 2007). Information and communication technologies (ICT) play a central role in SCM by helping organization to collect and analyse information. Also ICT could provide relevant, accurate, and timely IS and quick communication among SC partner (Rashed *et al.*, 2010). Besides, Sander

& Premus (2005) indicated that the use of IT results in SC performance improvement such as timely delivery, responsiveness, costs, and product development cycle time.

According to Technology Acceptance Model (TAM) by Davis (1989), computer use behaviors are influenced by perceived usefulness as well as perceived utilization ease. The ease of use and perceived usefulness are the most important actual system use determinants. Moreover, external variables such as social (e.g. language, skills or facilitating conditions), cultural and political factors (mainly the technological use-related impact on politics and/or political crisis) influence these factors. The attitude towards using technology concerns the evaluation of the user's desirability to make use of a specific information system application. TAM plays an important role as a theoretical model that explains and/or predicts information technology use behavior in different people (Legris *et al*., 2003).

Electronic data interchange (EDI) is the most widely used mechanism for IS transactions in SCM to facilitate interactions and coordination of transaction. EDI can enhance suppliers' delivery performance and improve the performance of SC (Lee *et al.,* 1997a). On the other hand, Hill & Scudder (2002) concluded that many firms view EDI as a tool for traditional transactions (e.g. invoices and purchase orders) that can increase efficiency of the operation instead of a tool that can be used to facilitate IS and SCM. Other IS methods as noted by Albarune & Habib (2015) are discussed briefly in the following sections:

i. E-mail

This method is normally considered quick and easier to use since information is normally delivered instantly.

ii. Instant Messaging

This method allows for the information exchange through text messages that can be done using mobile phones. It can also allow for audio sharing of information.

iii. Shared Workspaces Sites

This is usually considered the most convenient way to share information between the management and the co-workers through documents and projects. Internet also is a tool to facilities integration of supply chain by lowering cost, providing rich content and supporting linking of supply chain partners located from long distance (O'Brien & Marakas, 2006).

IS constitutes a key asset for humanitarian inter-organizations coordination (Tapia *et al*., 2012). Traditionally, HSCM IS involved one-to-one exchanges of data and information between the sender and the corresponding receiver through dozens of open and proprietary clear and outline protocols, available messages and given file formats (Tusiime & Byrne, 2011). Currently, IS employs advanced technology except for a few communities who still believe that culture and traditions are paramount and should be respected at all time (Siddhartha & Sachan, 2016).

Despite that, the internet, computers, and mobile phones communication have become very easy, effective and efficient. However, accessibility to this information can also be misused especially if we have individuals with malicious intentions (Lofti *et al.,* 2013). Hence there is also a need that information be shielded from unauthorized persons who may have ill intention of using it wrongly. As a result of the above, IT facilitates IS in supply chain, particularly when organizations have the ability and desire to share information among supply chain partners. Moreover, EDI and internet can facilitate timely and accurate IS that enable organization to improve forecasting accuracy; and facilitate improved decision making (Zhang *et al.*, 2006; Mason-Jones & Towill, 1997).

2.4.4 Information Sharing Barriers

Despite the significant benefits of IS , researchers have identified several barriers to this process (Capo-Vicedo *et al.*, 2011; Hernández-Espallardo *et al.*, 2010). One of the issues is the lack of information quality due to inaccuracy, timelessness and irrelevancy plus inaccessibility, lack of credibility and unavailability of the information. Without reliability or validity, information has no value to the receiving partner (Capo-Vicedo *et al.*, 2011; Li *et al.*, 2006; Moberg *et al.*, 2002; Lee & Whang, 2000). The second issue is the cost and complexity of implementing advanced systems since not all SC members are connected and have the capability to exchange data from advanced systems. However, using an advanced systems can be negatively perceived because of high capital investments and lack of cost-sharing agreements (Fawcett *et al.*, 2007; Patnayakuni *et al.*, 2006; Moberg *et al.*, 2002; Lee & Whang, 2000). There is also the risk that only one partner harvest the benefits created by increased IS (Lee & Whang, 2000).

The third barriers is the handling of confidential information and lack of trust |(Klein & Rai, 2009; Fawcett *et al.*, 2007; Patnayakuni *et al.*, 2006; Shore & Venkatachalam, 2003; Christopher & Juttner, 2000; Cooper *et al.*, 1997). SC members are often unwilling to share information to avoid opportunistic behaviour and prevent leakage to competitors. This issue can have a negative effect on organizations' commitment to relationships and their willingness to share information with other SC partners for fear of being misused. Another issue is power asymmetry between SC partners, which can result in resistance to sharing information (Christopher & Juttner, 2000). Information sharing barriers in SCM are summarised in table (2-4).

Table (2-4): Literature in information sharing barriers in SCM.

Themes	Barrier identified	Research approach	Findings
Organizational barriers , socio-cultural and quality barriers (Ahn *et al*., 1999)	Mutual co-operative behaviour, communication among parties, belief level about communicated information, information timeliness.	A case study of six supply chains are analysed, based on three manufacturers in the Korean home appliance industry.	Mutual co-operative behaviour, specificity of transaction-related assets, and ``criticalness" of traded parts are the key factors influencing congruence between customer requirements and constituent firms' capabilities.
Managerial and Organizational barriers (Mentzer *et al*., 2001)	Lack of SC vision and understanding concepts Unwilling to share risk and reward.	To integrate the antecedents and consequences of strategic and operational partnering conceptual research .	Expanded theory of partnering by providing an inclusive picture of the partnering phenomenon with the environmental pressures, antecedents, orientation, implementation, and consequences of strategic and operational partnering for vertical relationships within retail SC.
Managerial, Organizational and Technical barriers (Lee & Whang, 2000)	Lack of commitment by top management for IS and lack of strategic planning. Lack of IT	Analytical study of the types of information shared inventory, sales, demand forecast, order status, and production schedule. To discuss how and why this information is shared using industry examples.	IS presents a key element for effective coordination. Advances in IT can facilitate IS.
Technical and Financial barriers (Sohal *et al*., 2001)	Poor IT utilization and lack of technology / financial constraints.	Data was collected by means of a questionnaire survey that was conducted	Poor IT utilisation by manufacturers could be a result of failing to match IT capabilities to organisational needs.

		among Australia's top 500 businesses.	
Organizational Barriers (Ardichvili, 2003)	Lack of trust between organizations member	A qualitative study of motivation and barriers to participation in virtual knowledge-sharing communities of practice".	There is a need for developing various types of trusts ranging from knowledge base to institution base trust.
Organizational Barriers (Larsen *et al*., 2003)	Lack of understanding of cost sharing benefits.	Questionnaire survey among 218 Danish companies about SCM.	Confidence and trust need be built between SC partners, these barriers can prevail if the collaborating parties do not feel they are gaining enough from the collaboration in relation to the resources they spend.
Organizational Barriers (Cetindamar *et al.*, 2005)	Lack of trust, risk-benefit evaluation, and lack of common goals for cooperation.	Field research of a successful collaboration example in the Turkish dyeing and finishing industry.	Factors supporting collaboration are observed as trust, common goals for cooperation, and existence of cooperation mechanisms, while barriers are related to three factors: lack of trust, risk-benefit evaluation, and lack of common goals for cooperation.
Technical barriers (Kim & Lee, 2006)	User-friendly IT systems were found to significantly affect IS	Quantitative study to analyse the impact of organizational context and IT on employees' perceptions of knowledge-sharing capabilities in five public sector and five private sector organizations in South Korea	Social networks, centralization, reward systems, employee usage of IT applications, and user-friendly IT systems were found to significantly affect employee knowledge-sharing capabilities in the organizations studied.
Managerial and Organizational barriers	Lack of top management commitment and vision	A triangulation method consisting of a literature	Technology, information flow, culture, trust, aversion to change, and willingness to collaborate major barriers to successful supply chain collaboration.

(Fawcett *et al.*, 2008)		review, a cross-functional mail survey, and 51 in-depth case analyses was implemented.	
Managerial and Organizational barriers (Forslund & Jonsson, 2009)	Lack of trust, different goals and priorities and lack of parallel communication structure	Hypothetical-deductive study, where the results are based on a survey of 257 purchasing managers in nine manufacturing industries in Sweden.	Supplier relationship obstacles (lack of trust, different goals and priorities and lack of parallel communication structure) were found to significantly hinder PM process integration
Organizational barrier (Richey *et al.*, 2009)	Lack of organization structure.	In-depth interviews with SC managers. A survey was developed to measure levels of SC integration drivers, barriers to SC integration, and firm performance.	The study finds that firms with a desire to improve, operating in a challenging competitive environment typically experience high levels of performance. Further, barriers to SC integration can actually increase the firm's ability to achieve firm performance as the firm is required to make greater efforts to overcome those barriers and develop effective SC linkages
Managerial and Organizational barriers (Michael Johnson, 2010)	Barriers and challenges related risk perception, knowledge deficits, trust, firm size, and organizational readiness that moderate the adoption and usage of e-markets in the sectors	A review of the literature on e-market adoption was followed by in-depth interviews with senior managers in buyer, supplier, and e-market organizations	Barriers and challenges related risk perception, knowledge deficits, trust, firm size, and organisational readiness that moderate the adoption and usage of e-markets in the sectors.

Organizational barriers (Lee *et al.*, 2010)	Organizational barriers, lack of organization structure,	A research model is proposed which describes the effects of organizational support, both formal and informal, on factors of TAM (technology acceptance model). A survey questionnaire is developed to test the proposed model	The most notable finding of our study is that organizational support is positively associated with factors of TAM.
Managerial and Organizational barriers (Gonzalez *et al.*, 2010)	Lack of understanding of cost sharing benefits.	A questionnaire was administered to the IS managers of the largest Spanish firms	Cost savings in staff and technology are generally seen as very important Regarding risks, lack of qualification among their providers' staff, the potential lack of compliance with contracts, and the inability to adapt to the new technologies
Managerial and Technical barriers (Manzouri *et al*. /2010)	Lack of information and awareness about SCM	A survey questionnaire and structured interviews among companies in Iran and Malaysia. The data were analysed using SPSS software.	Both Iranian and Malaysian companies suffer from a major barrier which is a lack of expertise and lack of information and awareness about SCM.
Technical and Socio-cultural barriers (Khurana *et al.*,2011)	Poor IT infrastructure / lack of technology and culture barriers	Questioners and interviews.	Identify the barriers into managerial, organizational, technological, financial, social and cultural.
Technical, Quality, and Manegerial	Information technology (technical	Literature, review research on IS the	IT leadership, trust and shared goals are factors which support information sharing efforts across organizations.

barriers (Yang & Maxwell, 2011)	barriers), leadership, quality of information (accurate and time of relevant information).	interpersonal, intra-organizational, and inter-organizational levels	
Financial barriers (Serdarasan, 2013)	Financial barriers	Multilevel analysis of literatures	Cost of training and specialized manpower. Financial barriers for high maintenance costs.
Managerial barriers (Cantor *et al*., 2014)	Individual barriers.	Survey approach.	Lack of incentives and rewards for sharing of information. Overload of information for reporting and gathering. Fear of being embarrassed for sharing wrong information Reluctance by individuals who are unsatisfied to share information Fear of being penalized in case the shared information is misused.
Managerial barriers (Kembro & Näslund, 2014)	Managerial barriers.	Critical analysis of literature review	Lack of perceived benefit from sharing information. Lack of confidence and trust in the IS systems. Lack of managerial and leadership direction.
Managerial and Organizational barriers (Grimm *et al*., 2015)	Managerial (Unwillingness , lack of experience, skills) ,Organizational (lack of commitments , goals and mission)	Literature Review	Unwillingness and lack of IS spirit Different levels of experience, skills and knowledge among employees Lack of commitment by the members of chain Workers with different priorities, goals and mission

IS across the SC could experience challenges such as confidentiality of the information shared (Albarune *et al*., 2015;Cantor, 2014); the reliability of the cost of the information being shared at a particular time (Dash, 2013) and the IT in place (Cantor, 2014); incentive issues concerning that particular process or rather the procedure of IS (Beske, 2012); emerging issues of the anti-trust regulations (Beske, 2012); the timeliness and accuracy of the information (Bhattacharya *et al*., 2014); and the growth and development of the organization or firm's capability to utilize the available information effectively.

However, one main barrier to interpersonal information would be the concerns about information privacy (Kache & Seuring, 2014). This results especially when organization workers do not actually have trust in each other (Beske, 2012). IT utilization for IS has proved to be disadvantageous **(**Kovács & Spens, 2007), including poor substitute for face-to-face communication since employees use machines to communicate rather than meeting and knowing each other, thus creating poor relations at work **(**Chandes & Paché, 2010)**.** It is also expensive to install and manage IT, especially in big organizations. Additionally, it is not safe since it has a centralized communication system which is vulnerable to abuse by people who may tamper with the organization's information if not well protected **(**Kache & Seuring, 2014). This is because the initial costs of embracing IT could be expensive, involving and time-consuming (Winter & Knemeyer, 2013). All the same, an efficient user friendly IT system would be the best platform for an organization to utilize IS especially across the SC sphere (Lotfi *et al.,* 2013).

Other key IS barriers are vision, people, management plus resources. For instance, Kaplan (2010) stated that vision-related barriers are seen in an organization through ineffective mission and/or vision statement that do not clarify the core business matters and therefore no success is achieved. Managerial barriers may include undesirable management approaches while conduct of employees and management is people-based barriers (Zheng *et al*., 2010). Managerial barriers also manifest through lack of confidence among staffs about IS and lack of skills on how to share the data (Lotfi *et al* 2013**)**. Lack of leadership and managerial skills also hinders information sharing, thus making it difficult to implement sharing of information (Abidi *et al*., 2015). Likewise lack of training and experience and low technology also hinders information sharing (Alftan *et al*., 2015). Integrating information during adoption of E-business into SC functions has proved to be slower than expected (Harland *et al.*, 2007). This was attributable to poor strategic information alignment, lack of awareness regarding potential benefits associated with IT adoption, lack of leadership-related management and related thrift in different contexts of organizations. Madu & Kuei (2014) say that lack of trust also makes it difficult in sharing of information since some of the managers cannot afford to share sensitive information about the organization when they are not sure whether the information will be secured by other members or not.

Secondly, the organizational barriers also affect sharing of information largely due to organizational structure and groups involved in IS (Lotfi *et al,* 2013)**.** Organizations with centralized leadership systems have limited IS (Abidi *et al.,* 2015). Employees are limited to sharing of information since they have to seek all information from their superior for decision making (Pandey *et al.,* 2010). Organizations with strict administration also lack IS (Morgan, *et al*., 2016). Some organizations fear sharing their information with other chain members since they fear losing stability and their position in the market (Grimm *et al*., 2015). Organizations and individuals may also resist sharing of information due to structural conflicts and differences (Abidi *et al.*, 2015).

Although technological advancement facilitates IS, some organizations may use different hardware and programming language and software which are difficult to integrate, thus causing challenges (Akhtar *et al.,* 2012; Dolinskaya *et al.,* 2011)**.** Technological factors may lead to breakdown of IS, thus it should be dealt with earlier (Huo *et al.*, 2015; Hoffman &Mehra, 2000)**.** Differences in technological capabilities of chain members may also lead to difficulties in inter-organization information system (Iakovou *et al.,* 2014; Dawes, 1996). Lack of ability among experts to maintain the level of technology due to rapid and gradual changes in technology also may hinder information sharing (Dash *et al*., 2013; Balcik *et al.*, 2010).

Furthermore, individual or groups behaviors within the organizations are also barriers to sharing of information (Grimm *et al.,* 2015)**.** One organization may need information but other people are not ready to share it, thus becoming difficult. (Iakovou *et al.,* 2014)**.** Organizations' effort to encourage and facilitate the sharing of information by putting resources into collective data and correspondence innovation gets to be futile if workers are not willing to share the data (Alftan *et al*., 2015). Individuals are also willing to share information when they are happy but hesitate to share it when they are unsatisfied (Jonsson & Mattsson, 2013). Individuals also feel the power, privilege and ownership of information will be lost when they share it (Günday *et al*., 2011). Employees from organizations also fear making mistakes and being criticized for sharing wrong information thus hindering IS (Kabra & Ramesh, 2015)**.** They also fear penalty if the information is wrongly interpreted and loss of importance (Kabra & Ramesh, 2015).

Information culture within the organization should be conducive to information management (Pandey *et al,* 2010). This include a culture that secures the support, enthusiasm and co-operation of staff and management alike (Alftan *et al.*, 2015). Low staff technological literacy also affects implementation of IS in an organization (Kabra & Ramesh, 2015; Stephenson & Schnitzer, 2006).

Connelly & Kelloway (2003) say that the effect of organizations' culture affects the employees' attitude on sharing of information. Therefore, failure to recognize cultural gaps between stakeholders in an organization affects information sharing (Akhtar *et al*. 2012). Lack of commitment from the employees and conducive environment is a major social barrier for sharing of information in any organization (Van Brabant, 1999). The managerial staff should be committed to their work and also have confidence. They should have the leadership skills which will enable them to implement sharing of information (Van Der Vaart & Van Donk, 2008). The top management should also be well equipped with the technological knowledge through proper training.

Competitive barriers may also hinder IS (Tchouakeu *et al*. 2011) since some organizations refuse to share its information with others to avoid competition and dominate in the market. Finance is also a major barrier to IS since adequate finance is required to install the information systems, train and pay the experts during information system implementation (Pandey *et al*, 2010). Inter-organizational IS across the humanitarian relief networks mainly involves data collection on physical damage, needs as well as vulnerabilities and capacities; processing the collected information by developing repository through organizing data for knowledge management as well as resource allocation decisions; to IS through various platforms, technologies and/or structures. Effective execution of these operations among actors allows creation of actionable knowledge which is used to inform decision-making regarding flow of resources (Day *et al*., 2009). Of note, intense communication among supply chain partners reduces behavioral uncertainty, including opportunism (Wuyts &Geyskens 2005). This implies that failure to share information across the SC network results in non-transparent demand patterns which eventually amplify demand. The consequences are poor services, high inventories plus frequent stock-outs (Lee *et al.*, 1997b). Although there are remarkable improvements in adoption of ICT infrastructure to promote improved coordination and collaboration among the humanitarian actors, there are still gaps around quality information generation, analysis as well as dissemination before, during and following disasters largely due to complexities involved in human response. This study will therefore explore factors contributing to current situation of humanitarian supply chain information sharing process and identifiey the main themes based on types of barriers: organizational, technical, managerial, financial, socio -cultural and quality barriers.

2.5 Conclusion

HSCM integrates varied levels of coordination ranging from IS, information technology, inventory, assessment, logistics, contracts, and joint decision-making (Fawcett *et al.*, 2008). However, several factors delimit the effectiveness of the SC as they influence the development of a structure coordination process that seeks to enhance the coordination while delimiting the negative elements attached to the overall process (Maon *et al.,* 2009). From the foregoing critical review of literature, this study identified various research gaps and challenges. It was found that HSCM and logistics studies are relatively new and in its infant stages. This highlights the need for more academic research particularly in IS and coordination (Leiras *et al.* 2014, Caunhye *et al.*, 2012; Kunz & Reiner, 2012; Overstreet *et al.* 2011; Natarajarathinam *et al.*, 2009; Petit & Bresford, 2009, Kovács & Spens, 2007, Atlay & Green III, 2006).

Vertical coordination has been well-examined in SCM literature (Johnston & Kristal 2008 ; Lado *et al*., 2008; Van Der Vaart & Van Donk, 2008; Cruijssen, *et al*,. 2007; Benton & Maloni 2005; Johnston, *et al*., 2004). However, there is a gap of limited academic research addressing the horizontal coordination in SCM (Chen & Roma, 2011; Telgen *et al.* 2010; Verstrepen *et al*., 2009; Oh & Rhee, 2008; Cruijssen *et al*., 2007). According to Pomponi et *al.,* (2015), horizontal collaboration in SCM is a neglected topic and the related literature is still in its infancy.

This review also identified very limited studies on IS issue at the level of horizontal integration of SCM (Chen & Roma, 2011; Gazley 2010; Schotanus &Telgen, 2010;Verstrepen *et al*. 2009; Oh & Rhee 2008; Cruijssen, *et al*. 2007). Beside that, IS must be studied carefully particularly in the perspective of multiple stakeholder in humanitarian field (Caunhye *et al.*, 2012; Kovács & Spens, 2007). Studying IS across the supply chains is critical in meeting the needs of chain members, informing better decisions in their operation, cost saving, reduced inventory costs and more responsive to customer's demands (Lee *et al.,* 2000; Mentzer, 2004). However, information sharing has not been specifically investigated within the context of disaster relief where both uncertainty and variability greatly exceed that found in normal supply chain environment (Day *et al.,* 2009).

Information remains vital across the HSCM. However, this study identified various barriers to IS, including privacy and confidentiality (Cantor, 2014), the reliability cost involved in information sharing (Dash, 2013), incentive or procedure of IS (Beske, 2012), the reliability and information technology related cost (Cantor, 2014), emerging issues of the anti-trust regulations (Beske, 2012) and the timeliness and accuracy of the information (Bhattacharya *et al.,* 2014), among others. Certainly, more research is required in order to investigate the barriers and challenges of using information sharing between the supply chain members, particularly at the horizontal level of integration (Pomponi *et al.,* 2015; Chen & Roma, 2011; Gazley, 2010; Verstrepen *et al*., 2009).

Successful SCM requires effective management across the the supply chain in order to achieve performance in organizational processes and operations (Lambert & Cooper, 2000; Beamon 1999; Tan *et al*., 1999; Morgan & Monczka, 1996). However, limited levels of coordination hampers the overall humanitarian efforts integrated with a certain region thus limiting overall humanitarian efforts (Balcik *et al.,* 2010). Moreover, ensuring efficient coordination is the greatest challenges among humanitarian organization (Maon *et al.*, 2009). Due to increased complexity in the HSCM environment, and lack of coordination represented in information sharing, uncertainties in the humanitarian supply chain activities arise due to lack of accurate information. Thus, to reduce uncertainties, IS barriers between humanitarian organizations must be investigated (Howden, 2009; Spens & Kovács, 2009; Van Wassenhove, 2006).

Limited IS between humanitarian stake holders (un- organizations, international and local NGOs, governments, military, private sector and donor) influences their response operation and decisions through centralized or decentralized coordination structures. Therefore, more research is required to explore the barriers to share the information between them (Leiras *et al.,* 2014; Kunz & Reiner, 2012). As a result of the critical literature review this research aims to investigate the barriers facing information sharing at the horizontal level of coordination of SCM and the research was conducted in humanitarian organizations in Jordan.

CHAPTER 3: RESEARCH CONTEXT–HUMANITARIAN ORGANIZATIONS

The previous chapter presented a holistic picture for the latest literature regarding the research problem as well as clarification on the research gaps. This chapter provides an overview of the coordination and information sharing (IS) between humanitarian organizations working in Jordan. The chapter starts with Jordan – Background and location explained in section (3.1), Refugee Crisis and its Impact on Jordan described in section (3.2), Humanitarian needs of Syrian Refugees in Jordan explained in section (3.3). Followed by the role of humanitarian organizations in Jordan in meeting refugee needs in section (3.4) .The need, importance and challenges of coordination and information sharing among Humanitarian Organizations discussed in section (3.5) and finally the chapter conclusion discussed in section (3.6).

3.1 Jordan – Background and Location

The Middle Eastern Kingdom of Jordan is located in the continent of Asia, at the south of Europe. It is the 122th largest nation in the world and covers an area of 88,802 square kilometres. The population of the country is 7,862,565 with a density of around 70 people per square kilometre (Country Meters, 2016). The Western part of the country experiences essentially a hot climate with dry summer spells and a cool wet winter. However, the overall country has a desert climate with less than 200 mm of annual rain. Its climate is divided amongst three distinctive geographical regions: the Mountain height Plateau, the Jordan Valley and the Badia region or the Eastern desert. With respect to its water resources, Jordan is considered the 4th driest country in the world with desert environments covering around 92% of its land area (Altz-Stamm, 2012). The water resources of the country are utilized mainly by four sectors: municipal supplies, tourism, industry and agriculture. The agriculture in the Jordan Valley is supported mainly by directing the surface water resources while the Highland farms quench their thirst mainly by wells or rainfalls.

It is a relatively small country located at the intersection between the Levantine and the Arabian areas of the Middle Eastern regions of the world. It is bordered on the east by Iraq; to the north is Syria and Saudi Arabia in the East and the Southeast. The Western area is neighboured by Israel and Palestine, with the country's only access to the sea through the Gulf of Aqaba to the far south (Cavanagh, 2013). Figure (3-1) shows a map of Jordan and its neighbouring boundaries.

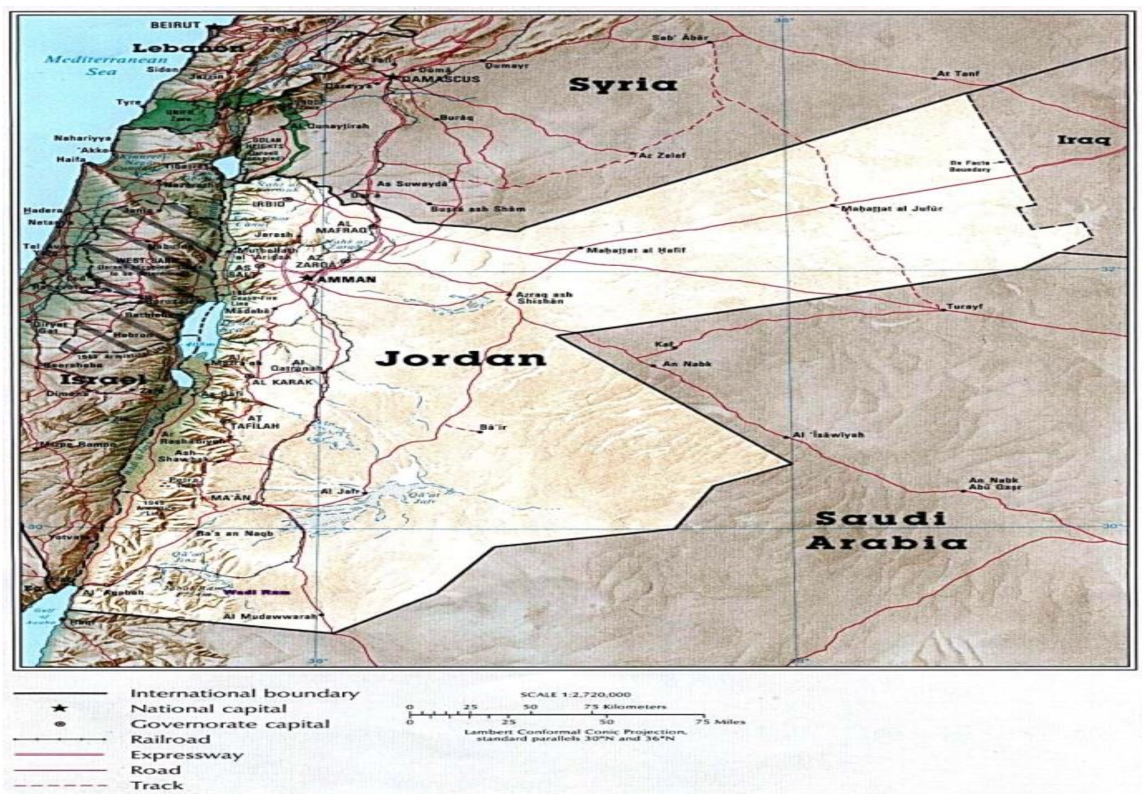


Figure (3-1): Map of Jordan and its Neighbours
Source: Cavanagh (2013).

3.2 Refugee Crisis and its Impact on Jordan

To understand the impact of refugee influx into the Jordanian territories, it is important to understand the diversity amongst these refugees (Fagen, 2009). Comparably, the number of Iraqi refugees in Jordan has been stable over the years with the current population of only 29,072 in 2014 (Su, 2014). They have swept into the Jordanian boundaries twice: first, during the early

1990s, when there was an outbreak of Gulf war; and second, during the invasion of 2003 (ICMC, 2014).

During the current crisis of Syria, the influx of the Syrian refugees has made all the non-Syrian refugees in Jordan feel forgotten (Hudson, 2015). In 2014, the government released the National Resilience Plan (NRP) in order to balance out the effects of the Syrian Crisis on the Jordanian economy (Alshadfan, 2015). The concentration of the Syrian refugees contains a majority under the age of 18 years and the government faces extreme challenges in order to educate this population.

With respect to health care systems and the impact of refugees on the formal and informal sector of the economy initially, the government had offered free medical services to the refugees. However, these were repealed with time as a result of straining budgets and deteriorating health care systems (Francis, 2015). Among all the havoc, the Syrian refugees are not allowed to work in Jordan legally. Despite that, around more than 150,000 Syrians contribute to the informal sector of the Jordanian economy (Connable, 2015), which is worsening formal sector by increasing a downward pressure on the wages which resulted in a rise in the poverty level of Jordan's most sensitive communities (Schneider *et al*., 2016). Figure (3-2) shows the distribution of the Syrian refugees in Jordan geographically, while figure (3-3) shows the distribution of Syrian refugees in Jordan per Governorate (UNHCR, 2015). As it can be seen, the concentration of refugees is uneven and creates a significant problem for the Jordanian government to manage the limited resources of food, water and infrastructure.

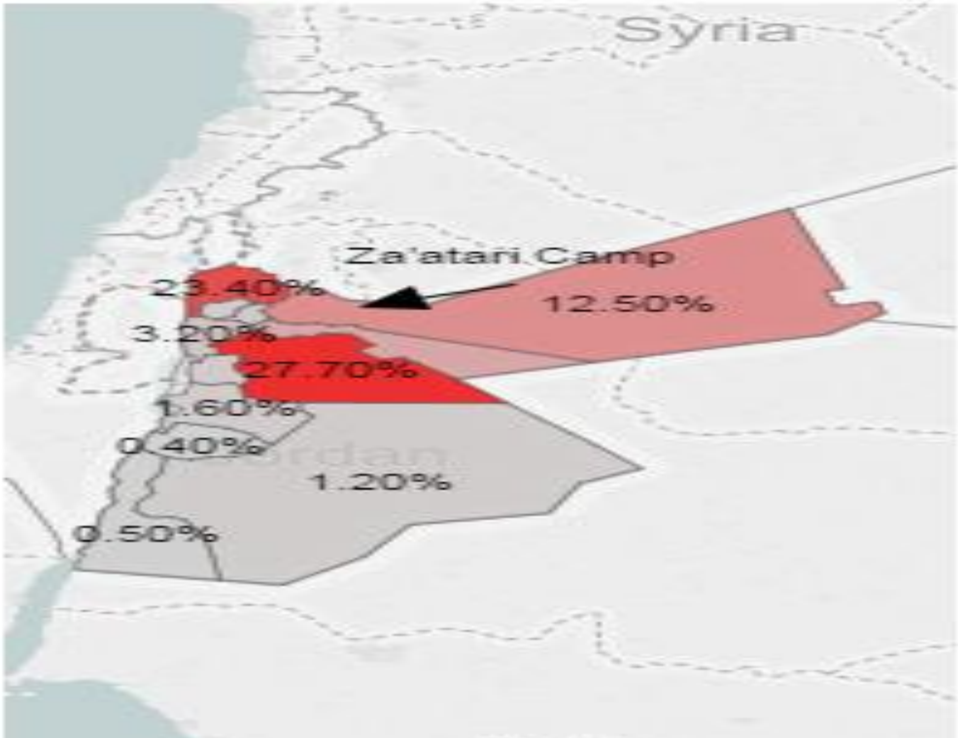


Figure (3-2): Distribution of Syrian Refugees in Jordan

Source: UNHCR (2015).

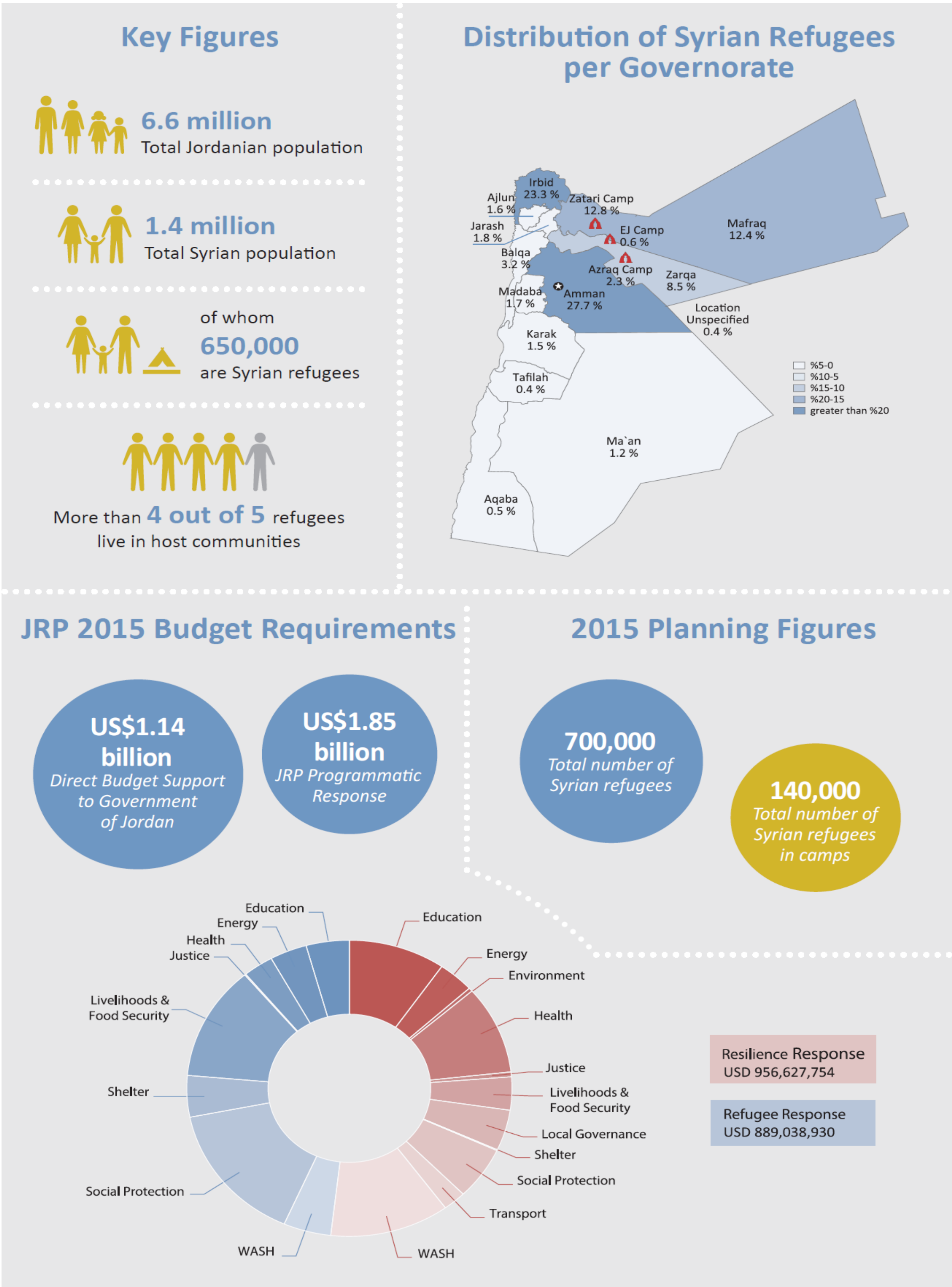


Figure (3-3): Distribution of Syrian Refugees in Jordan per Governorate

Source: UNHCR (2015)

3.3 Humanitarian needs of Syrian Refugees in Jordan

The Syrian crisis has reached in its fifth year and millions of Syrians continue to face hardships (Margesson, 2013). However, the neighbouring countries are also affected and faced with a variety of challenges, particularly refugee problems. In Jordan, the number of Syrian refugees has been increasing and around 85% of the refugees live in host communities. The crisis impacts heavily on Jordan's economy. In 2013 alone, the Jordanian government spend $81.4 million on educating 78,531 Syrian refugee children in its public schools (Ministry of Planning and International Cooperation, 2013). Although refugees are currently allowed to access public sector services so as to obtain relatively improved health services, they are required to pay for the services at similar rates to uninsured Jordanians. However, these rates are still highly subsidized and more than affordable. The situation is worse since the support from international assistance programs is reducing and therefore posing a health care barrier (United Nations High Commissioner for Refugees (UNHCR, 2015). This is consistent with Fröhlich &Stevens (2015), who found that funding aid and cash vouchers given to refugees has continued to reduce. Besides, the aid grants are inadequate to support their living costs and only a few of them are eligible for assistance.

Statistics show that two out of three families of Syrian refugees in urban areas live below absolute poverty line (UNHCR, 2015). This precarious situation also impacts significantly on Jordanian citizens who live by refugee communities. In general, the population increase due to refugees' crisis that has negatively affected public services across the entire population, with the northern Governorates being the most affected. This calls for major humanitarian relief operational intervention from Jordanian authorities, local organisations and international humanitarian community to address the needs of Syrian refugees in Jordan.

3.3.1 Food Needs and Emergency Aid

Food and emergency are the highest priorities of refugees (Coutts & Fouad, 2013). According to WFP (2016), the humanitarian crisis is worsening the food needs as the refugees continue to increase in all hosting countries. In case of Jordan, WFP has been actively involved since the onset of crisis in 2012. In Jordan, there are various ways in which WFP provides food assistance to refugees. The agency started food assistance in the form of hot meals in Zaatari refugee camp, and was later followed by provision of home rations. In 2013, WFP started paper food vouchers which could be redeemed in large supermarkets in Jordan. Similar strategies are in place for non-camp refugees. The UNHRC has been actively involved in registering Syrian refugees and it started issuing e-vouchers in January 2014 which was followed by issue of e-card in August 2014. There are three established partners in the voucher programme of WFP in Jordan, namely, Human Relief Foundation, Islamic Relief Worldwide, and Save the Children International. Recently, ACTED also joined in the partnership, providing services in Azraq Camp (WFP, 2016).

3.3.2 Health Needs

International Medical Corps (IMC) has had a significant role in health care services for Syrian refugees. Considering primary health care, IMC assisted in static health clinics managed by Jordanian national authorities and also helped in managing health centres in various refugee camps. IMC also operated mobile medical units (MMUs) to provide medical care to those who are unable to access local health care system. The MMU offers basic health care effectively and facilitates overall health and diagnoses of disease. IMC also established Mental Health and Psychosocial Support programme which focuses on meeting mental health needs of children affected by armed conflict. Child-friendly spaces were established IMC in refugee camps as well as in urban areas. These spaces make children feel more comfortable as well as secure, provide play area, and promote interpersonal relationships. IMC also provides training to health care staff as well as to refugees. Training focuses on detecting and addressing mental health issues particularly. There are case managers who follow up mental health cases and ensure recommendation to any additional service as needed by service user (International Medical Corps.org, 2015).

In 2013, the Jordan Health Aid Society (JHAS) launched nutrition programmes. Before 2013, the extent of nutritional work of JHAS was limited to education messaging regarding nutrition among refugees who attended clinics established by JHAS. Gradually, JHAS made improvements in the nutrition component health services and new effective programmes have been designed and implemented which include management of severe acute malnutrition (SAM) (in association with UNHCR), iron deficiency anaemia in management pregnant women (MEDAIR-WFP), and management of MAM. Most recently, JHAS conducted a survey research in partnership with UNICEF, UNHCR, WFP, and Centres for Disease Control & Prevention (CDC) and then implemented MEDAIR. JHAS has also been actively involved in supervising teams and in the collection of data for further research. JHAS also drafted standard operating procedures for CMAM and anaemia management programme (data.unhcr.org, 2014).

The Amnesty International Charity Limited reported that the support provided by international community and Jordanian government to provide access to health service has been grossly inadequate. There are significant barriers that hinder Syrian refugees' access to health care as well as other vital services. The report presents heart-rending cases in Jordan to show lack of health care services of those who require emergency care for their war inflicted injuries. Many of them are being turned away and left to die. The major barrier for Syrian refugees in Syria is increased fees of health care services imposed in 2014. Furthermore, the verification process has become increasingly complex, leaving refugees unable to get health care services (The Amnesty International Charity Limited, 2016).

3.4 The Role of Humanitarian Organizations in Jordan.

Since the Syrian conflict broke out in 2011, there have been massive humanitarian outcomes inside Syria and the neighbouring countries. Around 630,000 Syrians have taken refuge in Jordan, thus posing a large-scale challenge to the government and humanitarian organisations to meet their needs (Fargues, 2014). The Jordanian government and citizen have been very helpful and welcoming towards refugees, and have sought to bear the wide impacts on living standards and political stability due to the refugees' influx (Mitri, 2014). Hence, there has been a significant strain on the government services. Due to these concerns, restrictions on access to Jordanian border have been growing.

The biggest world's second largest refugee camp is located at Zaatari in Jordan with more than 150,000 refugees. The humanitarian community and organisations have provided principal support to the government of Jordan (Ferris, *et al*, 2013). However, bilateral development assistance in general has been limited (Zetter & Ruaudel, 2014) due to the overwhelming demand (UNHCR, 2015). Although the camp faced many difficulties during set up, they have continued to diminish with increasing support (Balsari, *et al.*, 2015). However, there are concerns about protection and security due to lack of governance system and consultation with local communities (Stoianova, 2012). This situation is compounded by the unhappiness and grief among refugees that create a tense situation (Zyck, 2013: p. 10-12). Due to the lack of coordination among humanitarians, the donor and agency resources are concentrated in this camp yet no solution has been reached (Hall, 2013).

Although the camp was aimed to release the pressure, the number of Syrian refugees continue to grow in other cities (Abisaab *et al.*, 2014). About 85% of the refugees have registered with UNHCR, which provide them with adequate assistance such as cash and vouchers while the government provide free access to other services (Achilli, 2015). Nonetheless, the services are not sufficient (Francis, 2015) as shown by research that 62% of refugees in urban areas were living in a destitute situation, particularly those who are un-registered and those with expired registration (Zyck & Armstrong, 2014). Therefore, many actors are prompted to provide necessary support to the affected populations (Berti, 2015) despite their limited ability. Other barriers include lack of flexibility and adaptability among the middle-income population (Sami *et al.*, 2014).

Although there has been a high level of humanitarian activities and visibility in Jordan, the crisis still casts a lot of uncertainties (Coutts & Fouad, 2013). The country profile shows that Jordan provides a ‘favourable’ protection space (UNHCR, 2014). All activities are coordinated between UNHCR and Ministry of Planning and International Cooperation of Jordan with the assistance of the Ministry of Interior (MOI), which manages emergency response, national security, and other domestic security issues. With the new directorate in place, the focus is on all Syrian affairs instead of managing camp affairs only which also include concerns of host communities (Darcy *et al.*, 2013). The Memorandum of Understanding (MOU) between UNHCR and Jordan states that there must be a durable solution for refugees after the first six months. However, little has been done to enforce this provision.

Jordan allows the UN agencies and other NGOs adequate operating space to provide humanitarian support to Syrian refugees (Balsari *et al.*, 2015). Therefore, the government maintains an open border policy that allows refugees enter Jordan through two official crossings (Darcy *et al*., 2013) despite the growing refugees influx and tensions among host communities (Hall, 2013). Often refugees enter through unofficial crossings and are apprehended by Jordanian authorities and confined in camps. Besides, they have limited movement since they deliberately lose their Identity documents (Fargues, 2014) as previously reported that about 35% of refugees' documents were lost or misplaced by the Jordanian government (El-Khatib *et al.*, 2013). Refugees can also be bailed out by citizens and leave the camp and get their documents back. Sometimes, refugees only ask for short-term leave and never return or just leave camps without notice (Fargues & Fandrich, 2012).

Generally, the Syrian crisis has posed an unprecedented challenge due to refugee influx that has increased Jordan's population by 10%. Consequently, Jordan provides support to the refugees in accordance with 1951 convention relating to the status of refugees. Moreover, the host communities are faced with challenges such as deteriorating quality of health care and education services, high rents, poor wages, and unemployment increase (El-Khatib *et al*., 2013). On the other hand, the refugees are struggling with an insidious feeling of insecurity, shame of dependence, and impoverishment leading to significant psychological distress due to loss of dignity and hope. Other negative coping mechanisms are associated with sharp increase in child labour, early marriage, and gender-based violence (Fargues & Fandrich, 2012).

Various local and international humanitarian organisations have responded by providing aid to the affected populations. However, the situation continues to worsen due to various challenges. For instance, there is lack of effectiveness of humanitarian services due to lack of IS and coordination among humanitarian organisation. The UNHCR has the mandate to provide essential assistance and protection to the Syrian refugees and ensure collaboration with the Jordan government. This ensures that all pressures exerted by refugee influx are alleviated and other extremely challenging situations which are unprecedented in any part of the Middle East are dealt with. Another key player is UNICEF, which has been involved in supplying comprehensive Water, Sanitation, and Hygiene (WASH) services to refugee camps such as Azraq and Zaatari camps among others. The agency works with other organizations such as ACTED to fulfil various WASH-related needs, including access to safe drinking water and hygiene promotion (unicef.org, 2015).

UNESCO helps Jordan deal with the consequences of the Syrian conflict. The agency has been working at an accelerated pace since mid-2013 in various program to support stakeholders in Jordan, both in humanitarian activities (Plan regional response 6) and in the national recovery Plan (Betts & Collier, 2015). Besides, it is the leading agency in education sector at strategic level, both in the mechanism of humanitarian coordination and structure - based aid resilience, namely the "Platform for community support host" (Achilli, 2015). Furthermore, it has also improved the skills of teachers, supervisors and Ministry of Education officials to respond to the challenges associated with the Syrian crisis. UNESCO has also provided analytical support to the Ministry of Education to develop crisis management tools (Hall, 2013). The agency has also launched a joint program with UN Women to provide employment opportunities to rural women and to link this element to the cultural heritage of northern Jordan. Finally, UNESCO has played an active role in the fight against illicit trafficking and looting Syrian cultural objects, through implementation of advocacy and awareness for the protection of endangered heritage and strengthening regional and international cooperation (El-Khatib *et al*., 2013).

Médecins Sans Frontières (MSF) has mainly been addressing health needs since 2012, including a long-running surgical programme that provide reconstructive surgery in Amman and other parts in Jordan (Betts & Collier, 2015; Balsari, *et al*., 2015). By contrast, Danish Refugee Council (DRC) started its operation in Jordan in 2003 during the Iraqi refugee crisis, and provided assistance to 65,000 vulnerable refugees with life-skills trainings, psychological support, information, cash assistance as well as referral assistance in 2015 alone (DRC, 2016). Another key player is Oxfam which has provided humanitarian aid to nearly half a million refugees in Jordan and Lebanon, ensuring access to potable water through tankers and other rehabilitation initiatives (Margesson & Chesser, 2013), money in cash, and emergency supplies. It also provides information to families about their legal and human rights and help them access medical, legal or support services (Margesson & Chesser, 2013). Moreover, Oxfam built blocks of latrines and showers in refugee camps, informal settlements and routes that people use to flee from Syria through the desert. It also repaired latrines in host communities and installed water distribution systems through pipes in the refugee camp of Zaatari.

Overall, the NGOs has played a huge role in preserving lives despite their focus on camp settings unlike other critical refugees' needs in urban settings (Yazgan *et al.*, 2015). There is also lack of coordination (Abisaab *et al*., 2014; Paho, 2000) among different agencies and the government, and lack of leadership and long term strategy. The HL are faced with uncertainties due to poor information consistency as well as complex decision making process during disaster (Van der Vorst & jack, 2002). Moreover, HL lacks skilled staff and necessary abilities to respond effectively during disaster (Thomas, 2003). Similarly, Long & Wood (1995) highlighted the shortage of relevant skilled staff in HL and the overall HSCM. There is also the need for alternative route plans due to impracticable infrastructure during incidents of disaster (Moody, 2001). Other issues are poor inter-agency relationship and the need for joint rescue efforts (Long &Wood, 1995) and lack of leadership as well as coordination during preparedness phase (Kapucu & Khosa, 2013). There is no doubt that this situation must be addressed in order to ensure effective HSCM.

3.5 The need, importance and challenges of coordination and information sharing.

The Government of Jordan drafted the Jordan Response Plan 2015 (MoPIC, 2015) with the aim to coordinate between national, local, and international partners in Syrian crisis challenges. This plan consolidates the responses in humanitarian and development plans into a single comprehensive framework led by the country in accordance with the principles of the Paris Declaration (Crisp *et al*., 2013). The plan seeks to bridge the gap between humanitarian approaches and building resilience and reconciling program objectives, funding mechanisms and operating systems often operate in parallel when responding to the vital needs in the short term, in addition to other systemic and institutional medium and long-term considerations (MoPIC, 2015). One of the main aims of this programme is to establish high level of communication and collaboration among various humanitarian organisations in order to maximise sharing of information and organisational efficiency which in turn would optimise services to refugees as well as host communities (Abisaab *et al*., 2014).

It was noted that if it had the support of all actors, this approach could positively transform the way the international community could assist the people of Jordan. The delegation also noted the need to promote the development of Jordan disaster, rather than simply reacting to various natural and manmade disasters (Balsari *et al*., 2015). The plan adopted a system based on resilience to mitigate and respond to the effects exerted by the Syrian refugee crisis in Jordan and host communities. The coordination among various organisations, particularly logistic information is critical to the success of Jordanian response plan in tackling future crises and tensions arising from continued crisis (Ferris *et al.*, 2013). Collaboration between UN agencies and the government is noticeable as shown in figure (3-4) **(**UNHCR 2016). The country team of the United Nations in Jordan is making notable progress in promoting coherence to improve coordination among humanitarian programs, promoting resilience and long-term development (Abisaab *et al*., 2014). The merger of the functions of the Resident and Humanitarian Coordinators was the first crucial step in the transition towards a coherent structure of the leadership of the United Nations to coordinate humanitarian action and development assistance with the aim of boosting the resilience of Jordan (Sami *et al.,* 2014).

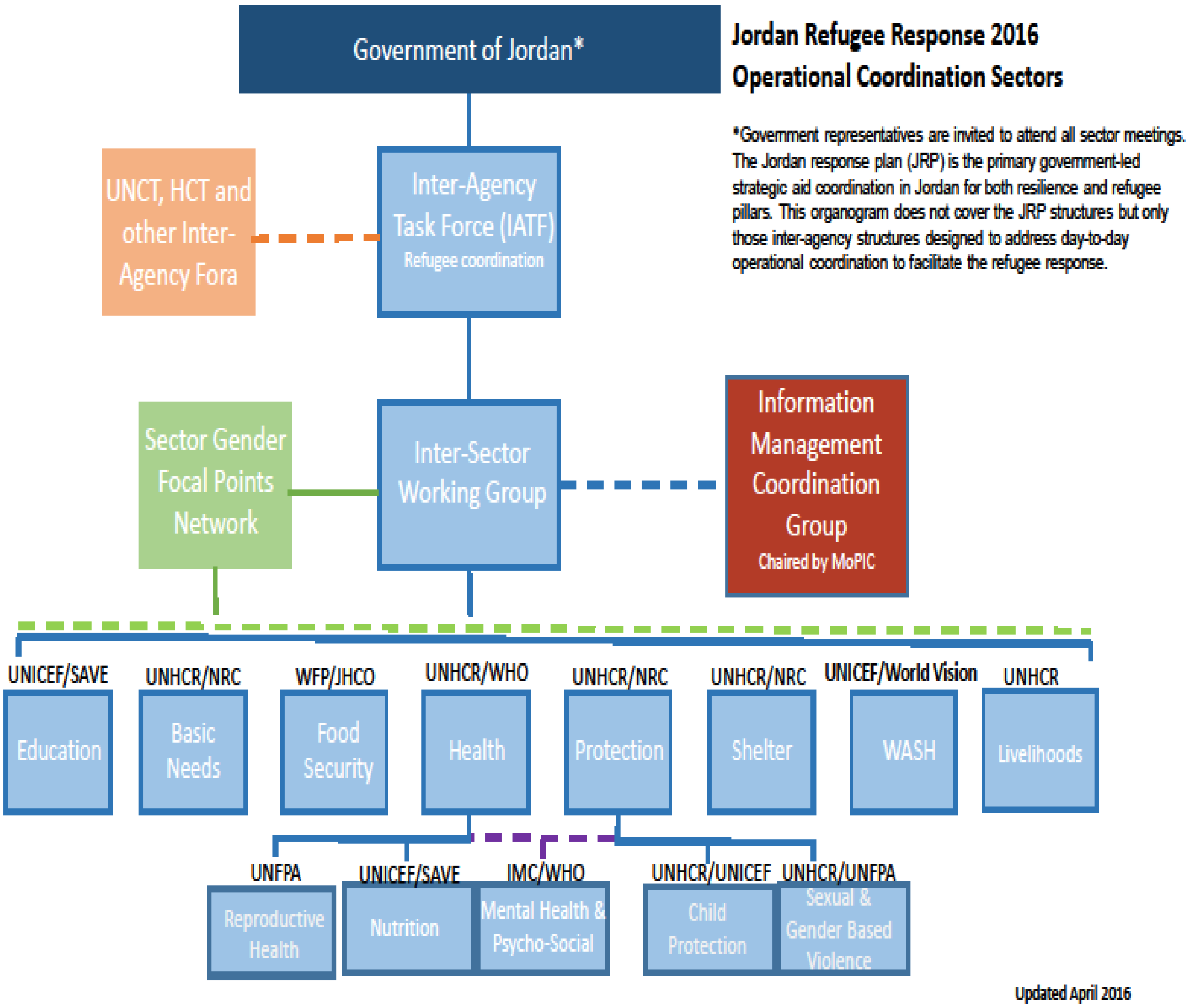


Figure (3-4): Jordan Refugee Response Inter-Agency Coordination
Source: UNHCR (2016).

Zyck & Armstrong (2014) noted the lack of coordination among the various agencies, particularly in the context of the work performed in accordance with their respective mandates. They all focus on maintaining or boosting their own visibility. Although Jordan has not yet adopted the approach "Delivering as one", it is vital that agencies adopt a holistic approach and speak with one voice in order to improve and strengthen coherence, coordination of delivery services and accountability. This is essential to achieve positive results (Sharp & Blanchard, 2013).

3.5.1 Challenges and shortcomings to coordination and information sharing.

The main reason of lack of coordination is that the humanitarian situation involves a large array of variety of diverse actors, and therefore they bring in their fair amount of challenges, issues, and criticisms (Francis, 2015). The following are some major challenges that hurdle effective communication and collaboration among various humanitarian organisation with local NGOs among others.

- **Lack of strategic coordination and planning**

As mentioned in the previous discussion, the donor actors are diverse. Prior to the crisis, the majority of the work done was directly through the embassies and in accordance with the decisions made in the capitals (Hall, 2013). However, unsurprisingly, these settings inhibited all sorts of strategic planning except the day-to-day reaction (Hall, 2013). So to tackle the problem of coordination among various agency multi-partnerships, there must be a leading organisation that should be responsible for the development and successful implementation of a strategic framework. But since there is a lack of leadership, the overall aid process has only short-term benefits. For an organisation to deal with leadership issues effectively, it must face following main challenges (Francis, 2015).

The main hurdle faced by UNHCR in Jordan is having three roles at the same time, although it made significant efforts to avoid the situation. The UN refugee agency is acting not only as a donor, but also as a coordinator and implementation partner. The triple roles make it difficult to function effectively in all three roles, especially due to the enormous scale of the Syrian crisis (Zetter & Ruaudel, 2014). Thus, a widespread concern has emerged among all the humanitarian actors about the role and ability of UNHCR in leading and coordinating, although in general, the coordination as well as the response has been improved (Yazgan *et al.,* 2015). Some of the critics have argued that UNHCR lacks the experience to deal with a crisis of such massive scale, particularly in delivering leadership and coordination functions (although it created a dedicated unit for coordination) (Balsari *et al*., 2015).

- **Short-term versus long-term orientation**

Another problem is that majority of the organisations tend to treat this crisis in short term or as an emergency response. However, the Syrian war has become a long-term crisis which requires strategic planning and coordination among all actors including government, international and local organisations (Balsari *et al.,* 2013). This problem can be credited to the tendency of humanitarian organisations to treat this crisis as a refugee one instead of a humanitarian one. The reason of this tendency lies with inclination of an organisation to work within the organisational context and goals only (Yazgan *et al.,* 2015). This in turn hindered full and prompt acknowledgement of the spill-over effects of this crisis on hosting communities and economies, infrastructure, and social cohesion of neighbouring countries (Mitri, 2014). Although there has been clear discussion about the impacts of the Syrian crisis on neighbouring countries, for instance, the implementation of livelihood projects, there have been yet some mistakes in developing and pursuing an inclusive institutional environment (Mitri, 2014). Thus it is important that all organisations should change their approach to deal with this crisis by collaborative working.

- **Lack of leadership**

Lack of leadership has also been considered as a significant factor that reduces organisational efficiency. Furthermore, considering the transition from emergency response towards an elongated long-term crisis means that the focus of the development agencies should be to facilitate host communities efficiently to face the refugee management issues (Mitri, 2014; Hall, 2013). Within this perspective, Fargues & Fandrich (2012) suggested that a more established organisation such as the UNDP should be considered as the most suitable candidate for leadership and developing an Early Recovery Strategy. In case of such a massive scale and prolonged crisis and various organisations failed to do so, assistance is essential which is not possible without effective collaboration (Margesson & Chesser, 2013). Berti (2015) also highlighted coordination issues and suggested that UNDP can play a significant role in the development projects.

- **Poor information sharing infrastructure**

One of the major impacts of the shortfall in the inter-agency coordination is poor IS leading to a lack of census (El-Khatib *et al*., 2013). Furthermore, data collection process is also difficult, and shows varying results and do not fulfil the standards accuracy (El-Khatib *et al.,* 2013). For example, the WFP conducted a Vulnerability Assessment of Syrian Refugees (VASYR) in the beginning of 2013 with the aim of improving targeting main beneficiaries based on the identification of vulnerabilities (El-Khatib *et al.*, 2013). The conclusions of the survey showed that 12% of the refugees were severely vulnerable and 65% of the refugees showed moderate vulnerability, implying that around 35% of refugees do not need emergency assistance for example food aid. Fundamentally, this survey was to assist in identifying targets and to verify and assess registration of refugees, but UNHCR requested to focus mainly on food assistance. Thus, although there was a complicated formula used for VASYR study, the indicators used in the survey were inaccurate**.** This means that they do not show actual situation instead they show improvement (Betts & Collier, 2015).

- **Organizational limitations**

Local NGOs and small social organisations are also actively participating in this crisis. All these are relatively smaller organisations as compared to those mentioned above and are also no match to the government. The main limitation of local NGOs and organisations is that they lack adequate resources both financial and human resources. Due to limited financial resource the local NGOs are unable to launch large scale programmes. Furthermore, smaller NGOs also lack highly trained and capable staff (Betts & Collier, 2015).

- **Lack of Funds**

Finally, the lack of coordination issue is increasing compounded by the existence of lack of funding which is not proportional to the response requirements (Schneider, *et al.,* 2016; Betts & Collier, 2015). This problem has contributed to increased pressure on infrastructure and national services thus affecting Jordan's resilience. By the end of 2015, around $ 1.07 B had been committed from the donors to the Jordan response plan which corresponded only to 36% of the funding needed (JRP, 2015). As for the first quarter of 2016 the total fund request was $ 750 M compared to the total fund committed by the donors of $ 160 M. This leaves a gap of $ 590 M which represent 22% of the funding required for refugees needs as shown in table (3-1).

Table (3-1): Distribution of received funds and gap in each Sector (USD: United State Dollar, M: Million Dollar, B: Billon Dollar).

Working Sector	Total Requested (USD)	Funds Received(USD)	Gap Across Sector (USD)
Basic Needs	177.3 M	26.3 M	151 M
Education	83.8 M	25.1 M	58.7 M
Food Security	188.2 M	32.2 M	156 M
Health	72.7 M	22.2 M	50.5 M
Protection	125.1 M	23.1 M	102 M
Shelter	51.1 M	18.6 M	32.5 M
Wash	51.1 M	16.6 M	35.1 M

Source: Developed by the researcher (data.unhcr.org)

3.6 Conclusion

Jordan is located in the continent of Asia, at the south of Europe. The country is the host of many refugees from Iraq and Syria despite its harsh climatic challenges. With the eruption of the Syrian civil war in March 2011, there was more than half the country's pre-war population and more than 11 million people flee to other countries as refugees or were killed (Mercy Corps, 2016). As of 2015, there were 630,000 registered Syrian refugees by UN refugee agency in Jordan (Manfreda, 2016) versus 29,072 Iraqi refugees in 2014 (Su, 2014). The situation has adversely impacted on Jordan's economy and overall public services across the entire population. This has contributed to significant barriers that hinder Syrian refugees' access to health care as well as other vital services. Although donors and humanitarian agencies have concentrated their resources towards addressing the needs of refugees within their camp, the solution has not been reached due to the lack of coordination among humanitarian organizations (Hall, 2013).

Among the factors contributing to ineffective humanitarian services is lack of IS and coordination among humanitarian organization (Abisaab *et al.*, 2014). There is also lack of strategic planning, short-term versus long-term orientation, lack of strategic leadership, poor IS infrastructure, and lack adequate resources, and particularly financial and human resources. These problems cut across different agencies and the government along with considerable challenges contributing to the coordination gap, thus leading to a lack of leadership and long term strategy. Evidently, there is urgent need for major humanitarian relief operation intervention from Jordanian authorities such as Response Plan Jordan 2015, and local organizations or international humanitarian community to address the needs of Syrian refugees effectively.

CHAPTER 4: RESEARCH METHODOLOGY

This chapter explains and discusses the appropriate methodology in order to achieve the research aim and objectives, and explains the design which was used to acquire the data that has been analysed for the study. Also included in this chapter, the research Philosophy and approach (Interpretivism, induction and qualitative design), strategy and methods, time horizon, research design, data collection (primary and secondary data, sampling, triangulation, pilot case study,ethical issues), data analysis, validity and reliability and finally chapter conclusion.

4.1 Research philosophy

Research Philosophy is the development and nature of that knowledge (Saunders, *et al*. 2006). Usually, it contains important fundamental assumptions about the ways through which the researcher views the world and underpin the overall research strategy and methods chosen (Saunders *et al.*, 2009). Research philosophy provides other alternatives, including interpretative, realism plus positivism (Saunders *et al.*, 2009). However, pragmatism allow researchers to choose more suitable techniques, methods and/or procedures that address the research needs and goals (Creswell, 2013). Figure (4-1) below illustrates the data collection and management techniques for implementing research.

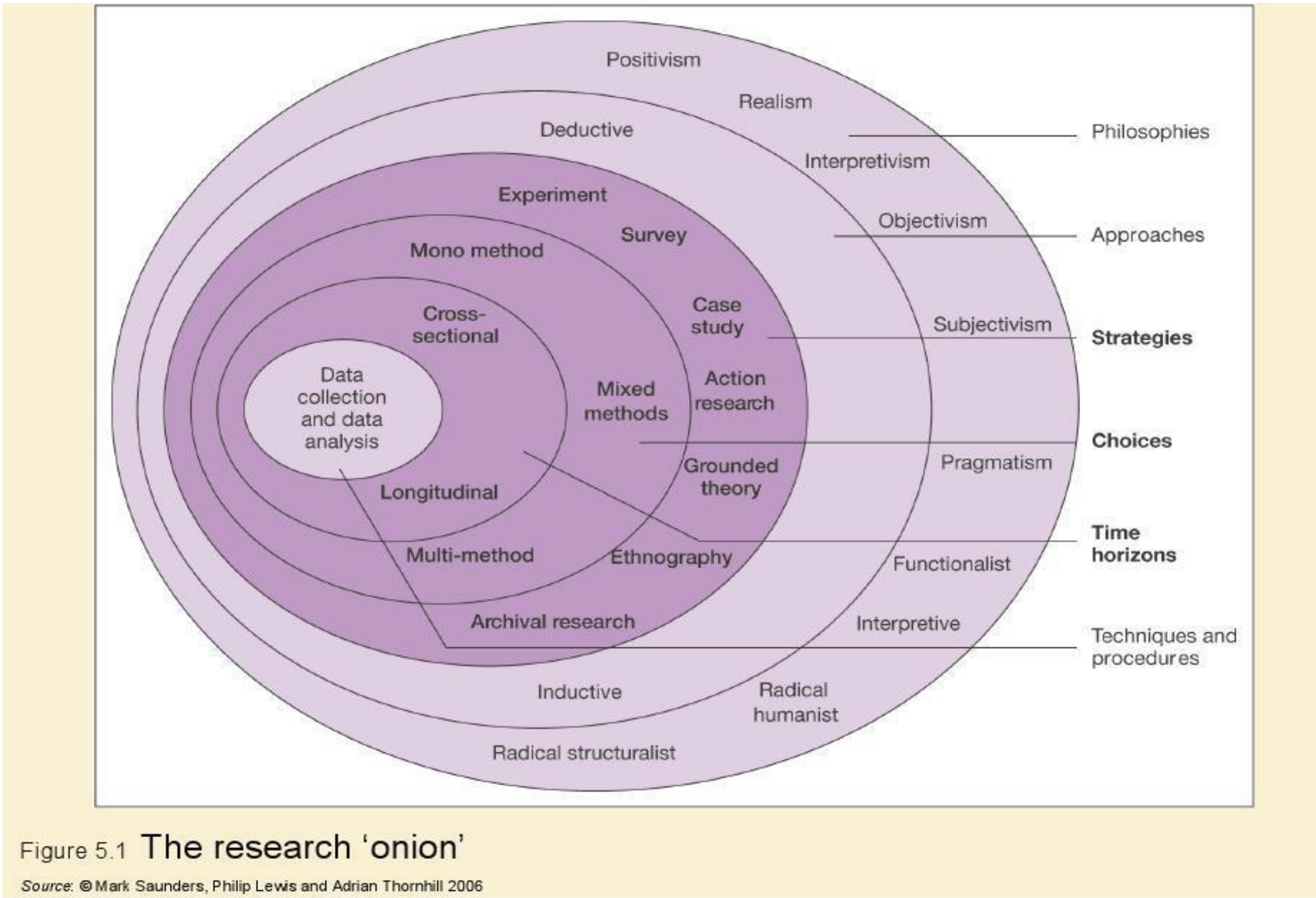


Figure (4-1): The Research Onion

Source: (Saunders *et al*. 2009,p.108)

Research process is organized in four main elements: Ontology, Epistemology, Methodology that represent the plan of action and Method which refers to the data collection and analysis (Crotty, 1998). Ontological assumptions are theoretical perspective related to the nature of reality, which provokes speculation about the assumptions used by the researchers regarding the way the world works (Saunders *et al*., 2006). From this perception, the ontological consideration positioned this research into interpretivist perspective (Saunders, *et al.*, 2009) to allow the researcher to obtain different perceptions and understanding about SC IS barriers using qualitative methods.

Epistemological assumptions are theoretical perspective concerned with "what constitutes acceptable knowledge in a field of study", and they include realism, positivism and interpretivism (Saunders *et al.*, 2000) as summarised in Appendix 2. Interpretivism and positivism are two main perspectives used in combination by the SC management and researchers (Bryman & Bell, 2007) to determine the appropriate epistemological perspective to be used (Saunders *et al*. 2012). Therefore the researcher must make appropriate choice of research philosophy based supportive evidence.

4.1.1 Positivism

Positivistic perspective posits that the world is external (Carson *et al.*, 2001) as well as the single objective reality regarding any research phenomenon irrespective of the researcher's perspective and belief (Hudson & Ozanne, 1988). Positivist researchers remain independent of study participants by keeping a distance to ensure emotional neutrality in order to distinguish between reason and feeling (Carson *et al.*, 2001). Besides, they should seek objectivity as well as employ consistently rational or logical research approaches, including statistical plus mathematical techniques based on specifically structured techniques to determine objective reality (Carson *et al.*, 2001). Positivistic perspective was not used in this study since the researcher had to interact actively and directly with the subjects in order to understand their perceptions and behaviours as well as derive meaning from transcripts and interviews with participants regarding the research phenomena.

4.1.2 Realism

Realism is the scientific enquiry based on the fact that the existing reality is independent of human thoughts and beliefs (Saunders *et al*., 2006). However, researchers can only understand the reality of social world by understanding the social structures influencing the phenomena under investigation (Bhaskar, 1989). Therefore, human senses can only visualize some aspects of the bigger picture and support a research perspective that seeks to understand differences across humans as social actors, which is the focus of the current study.

4.1.3 Interpretivism

Interpretivism (phenomenological approach) is an alternative view to positivism that seeks to understand people (Babbie & Mouton, 2008). Interpretivism assume that reality is subjective and dependent on the researcher mind who interact with but not unaffected by research process (Saunders *et al*., 2012). Besides, generalizability is not of fundamental significance since what is applicable today, might be invalid in the future, and that all organizations are unique (Saunders *et al*., 2006).

Interpretivism is broadly defined as a perception of a person about the meaning of an event rather than its existence beyond the individual's look (Bryman & Bell, 2012). The main focus of any form of interpretivism inquiry is and what is persons experience based on some phenomenon and how those experiences get interpreted. Therefore, interpretivism explores the complex social phenomena in order to gain understanding and interpret daily events, experiences or social structures and values attached to these phenomena by people (Rubin & Babbie, 2010; Collis & Hussey, 2003). The notion behind interpretivism is that social reality is not only subjective but also nuanced since it influenced by the participants' perceptions, values or the researcher's aims. Interpretivism allows knowledge development and building theory based on observed ideas and interpreted social constructions in order to visualize sense of events. The results is generation of more findings than common scientific knowledge, suggesting that the approach attempts to gain understanding of subjective realities and provide meaningful explanations about research participants (Rubin & Babbie, 2010; Blumberg *et al.*, 2011). This approach therefore illuminates about specific definitions and identify the phenomena based on perceptions of actors in a given situation.

Within the human sphere, this always translates into gathering information and perceptions of the people by qualitative methods (e.g. discussions, interviews and observation) which are inductive in nature (Bryman & Bell, 2012). Epistemologically, approaches of interpretivism are based on views of individual knowledge as well as subjectivity with emphasis on personal interpretation and important perspective (Mangan, *et al.,* 2004). This helps to understand the experience, motivation and actions of people that cut across the clutter of assumptions taken for granted together with the conventional wisdom (Saunders *et al*., 2009). A pure kind of interpretivism usually seeks to investigate instead of explaining, and to start from a given perspective which is free from preconceptions and hypotheses as in the current study.

According to Gephart (1999), interpretivistic views favour methods that produce facts for analysis in order to describe their meaning in the social world or situation based on theory and/or expansion. Besides, qualitative data collection methods are employed to generate data through interactive conversations and interviews as in the current study. Interpretivists mainly employ comparative analysis to evaluate all data on relevant incidents to theoretical category; integrating various categories as well as their properties; delimiting theoretical range; and theoretical formulation (Gephart, 1999).

Epistemological study critically exposes and interrogates the commonly unnoticed assumptions that are taken for granted and values that influence the way reality versions are socially constructed and thereby the action (Johnson & Duberley, 2013). Accordingly, this study does not adopt technical and objective facts of a typical positivist approach (Collis & Hussey, 2003) since it explores the conscious awareness of the world based on critical opinion and believes to understand the research phenomenon. Thus, interpretivism was deemed the most suitable approach to address the research aim and objectives of the current study as described by (Saunders *et al.*, 2009) to understand the social world of IS barriers to effective horizontal coordination of HSC.

A research design usually gives a framework for data collection and analysis. Moreover, the choice of research design critically reflects the decisions made regarding the priority dimensions within the research process (Mangan *et al.*, 2004). Methodology should always reflect on how the actual research will be undertaken. That is, the methodology encompasses development of rigorous, integrated and comprehensive approaches based on critical assessment of various options and influences (Blaikie, 2007). In general, it ranges from identification of research topic, underlying philosophical inclinations regarding the manner through which the theory should be generated, the criteria to be applied and resources allocation (Bryman & Bell, 2007).

In real situation, the research methodology should contain assumptions which are important based on ontological and epistemological research views about the world. Moreover, the assumptions about human knowledge and nature of a given reality might influence the research questions, methods used, and interpretation of the findings (Bryman & Bell, 2007). The contention here is that the influence of philosophical type that a given individual adopts is likely to be their main view about the accepted knowledge and process through which this is developed. This study used interpretivism philosophy perspectives to explore information sharing barriers within the social context of humanitarian supply chain in order to derive meanings actions contributing to current situation. Moreover, the researcher chose this paradigm in order to explain subjective reasons as well as meanings that underlying the social action so as to evaluate and improve on interpretive theories rather than developing new theories.

Some studies refute the possibility of beginning without having preconceptions or some form of bias, and emphasize on making how clear meanings and interpretations have been put on findings, and making the researcher become visible within the frame work of research as a subjective and interested actor instead of an impartial or detached observer (Mangan *et al.,* 2004). However, interpretivism methods have proved to be very effective in bringing into the lime light the perceptions and experiences of some given individuals from their own perspectives and hence challenge the normative or structural assumptions (Bryman & Bell, 2012).

4.2 Research approach

The term approach comprises of the uses of theory which might or might not be made explicit within the design though it provides the idea of the nature of the design (Saunders *et al.,* 2000). Simons (2009) states that two general approaches of reasoning exist which might lead to the acquisition of new kind of knowledge: induction and deduction (Appendices 3 and 4). Inductive approach usually begins with some form of observation of some given specific instances, and then proceeds to establish a given generalization. In other words, the data is initially collected, and then a theory is developed from the preceding analysis of the data. On the other hand, deductive approach starts with generalization and seeks to confirm if these generalizations can apply to some specific instances. Strictly speaking, the theory and hypotheses are developed, and then a research strategy is designed to rigorously test the developed theory (Saunders, *et al*. 2012; Mangan, *et al.*, 2004).Moreover, according to Saunders, et al. (2007), deductive research is implemented based on Robson's five steps: deducting the research hypothesis from theory; expression of the hypothesis based on operational terms that also propose an association between two variables that are specific; testing of the operational hypothesis through an experiment or empirical inquiry; examination of the specific study outcome ; and theoretical modifiocation where necessary based on the findings . In contrast, induction approach starts with data collection based on which data analysis is performed to develop a suitable theory that explain the research phenomenon. Usually, this approach is used where there is limited information in the research area and it starts from much specific to broader generalization, and usually draws conclusions based on identified facts and research findings in order to gain better understanding about the research phenomenon. Inductive approach is quite paramount in a qualitative research, and indication that a phenomenon which is social is explored for the purpose of finding patterns that are able to function as the main beginning of a given theory (Hartley, 1994). Deductive and inductive research approaches are mainly distinguished based on study hypotheses. Deductive approach aims to test the assumptions validity (i.e. theories or hypotheses), while inductive approach seeks to provide more contributions towards development of new theories or generalizations. In addition, deductive approach is often linked to positivist research philosophy while induction is linked to interpretivist research philosophy. Stated in other words, deductive research starts with formulating various hypotheses which are either confirmed or rejected in the process of research implementation. On the other hand, Abductive research process aims to explain 'incomplete observations' or 'surprising facts' and 'puzzles' or phenomenon as stated prior to research implementation process through integrated qualitative and quantitative data collection and analysis methods (Bryman & Bell, 2015), which is not the focus of this study. According to Alvesson and Sköldberg (1994), abduction approach is a combination of both deductive plus inductive approaches. Dbios and Gadde (2002) stated that "an abductive approach is fruitful if the researcher's objective is to discover new things-other variables and other relationships" (p.559). This implies that the researcher moves from emperics through theory to emperics. In addition, this approach differs from both deductive and inductive in the sense that the initial research framework may change as a result of unanticipated findings from empirical analsyis and /or from new theoretical insights. The method provides an option for combining established theories with new concepts from empirical findings which was not the focus of this study. As a referencing means, it is both logical and thereby reasonable as well as scientific, and it seeks to provide profound insight, and thereby generation of new knowledge. Therefore, this research approach allows social researchers to make logically and methodologically new discoveries in an ordered manner. Table (4-1) provides the main distinctions between deductive, inductive as well as abductive research approaches based on logic, generalizability, data usage and theory (Saunders, et al. 2012). Based on the previous discussion in the literature review in chapter two, it is clearly that there is a scarcity of information sharing issue at the horizontal coordination in SCM and also how to address the barriers in order to share the information for a better horizontal coordination. More specifically, there are no previous marked framework for the information sharing in HSCM in the literature review to help the researcher to grasp the research problem, this explains why the positivist approach was excluded (Creswell, 2013). Therefore, in the current study, interpretivism together with induction were followed generally and qualitative measures were used to reflect the holistic way in which the topic is being studied which is concerned with SCM issues (Eisenhardt & Graebner, 2007).

Table (4-1):Distinctions between deductive, inductive as well as abductive research approaches.

	Deduction	Induction	Abduction
Logic	True conclusion based on true premises in deductive inference	Untested conclusions are generated from known premises in inductive inference	Testable conclusions are generated from known premises in abductive inference
Generalizability	Generalizations are done from general to specific	Generalizations are done from specific to general	Generalizations are done from interactions between specific and general
Data use	Data is collected to evaluate propositions and hypotheses associated with an existing theory	Data is collected to explore a research phenomenon, identify themes as well as patterns and to develop a conceptual framework	Data is collected to explore research phenomenon, identify themes plus patterns and to locate them within a conceptual framework for testing using subsequent data collection or other means
Theory	Falsification or verification of theory	Generation and building of theory	Generation or modification of theory; incorporating suitable current theory, building new theory or modification of current theory

The researcher widely assumed that statistical generalization is not quite crucial in the current study since the collected data was analysed in great details based on which appropriate interpretations were drawn in order to understand the real environment rather than just the mathematical descriptions as in the case of positivism research.

As far as the approach of induction is concerned, it is quite unknown beforehand the nature of data to be generated and how the analysis frame is likely to look like (Yin, 2007). Flexibility, creativity and improvisation will therefore need to follow in the stage of analysis as well. The analysis focus and the result will develop slowly or emerge during the process of research (Barbour, 2009). Qualitative data analysis is interlinked with sampling and data collection in quite a number of cycles. Each individual cycle fuels the next one for the purpose of building knowledge (Kenneth , 2000). Openness is however, counterbalanced through adequate preparation involving appropriate literature search, research objectives which are properly formulated and instruments which are adequately developed and a kind of structured plan for analysis.

In this study induction was used as the main approach since it focuses on human aspects, understanding the research context, gathering qualitative data and flexibility to change the structure of the research during the research stages (Cameron & Price, 2009). This allows the researcher to start formulating context specific objectives to guide data collection on general ideas and/or views from research subjects and literature so as to provide better understanding about information sharing barriers in HSCM and make inference and conclusions from the study findings. Despite the above, initial codes were developed deductively around the main themes which emerged during literature review as stated by Miles & Huberman (1994) in order to allow analytical generalization. This is consistent with the argument by Hyde (2000) that inductive and deductive processes should complement each other in qualitative research analysis. Therefore ,in the current study deductive approach was used in order to compare cases within each other and expanding the existing theories as noted by Perry (1998, p.790) "The prior theory informs all main data collection equally and new theory is generated from all cases in one operation of cross-case data analysis across all the main cases". By using interpretive and inductive approach the researcher seeks to get deep understanding of human aspects and the research context. And in order to compare all the research cases with each other deductive approach was used to expand the existing theories, the IS barriers of horizontal coordination will be identified and clarify how these barriers can be bridged.

This study investigated the information sharing barriers of SCM at the horizontal level of coordination in the humanitarian context. Within this context, it is quite important to adopt a method that helps in understanding the perceptions of the individuals involved in the humanitarian context and the various existing dimensions that affect the phenomenon in a manner which is very holistic (Flic, 2009; Eisenhardt & Graebner, 2007). This, therefore calls for a method which is quite subjective for the purpose of viewing the phenomena that are developed from the perceptions and actions of people within the organizations. The topic was explored for possibility of building a new theory related to the management of supply chain (Hartley, 1994).

4.3 Research Strategy

Many scholars such as Tapia *et al*. (2012), Kovács & Spens (2011) and Schulz & Beleken (2010) suggest that empirical research with case studies in the field of coordination and collaboration of supply chain in humanitarian sector is an important aspect which needs to be investigated.

"Humanitarian logistics requires good and applicable research with empirical data being gathered through the use of case studies or other qualitative methodologies"

According to Yin (2009), case study approach is an empirical inquiry, which aims to investigate a contemporary phenomenon within its life context. This particularly occurs when the boundaries between the phenomenon and the context are not known clearly, and using multiple sources of evidence (Yin, 2003; Robson, 2002). A case study strategy as defined by Saunders *et al.* (2012) "explores a research topic or phenomenon within its context or within a number of real-life contexts". Under which the boundaries that exist between the context and the phenomenon are not quite apparent. This kind of strategy provide a kind of rich understanding of the main context and themes from the feelings and experiences of those responding gathered from the phase of explanatory and exploratory (Bryman & Bell, 2007; Yin, 2007).

There are three main types of case studies based on their purposes (Yin, 2013, 2003; Saunders *et al*., 2012; Barbour, 2008). These are the exploratory types which are described by Saunders *et al*. (2012) as "*a valuable means to ask open questions to discover what is happening and gain insights about a topic of interest"* (p. 171). They try to explain what is happening, through conducting interviews and literature reviews. Saunders *et al.* (2012) state that descriptive types aim "*to gain an accurate profile of events, persons or situations*" (p. 171) that relies on theory development and how a given phenomenon is taking place. Additionally, descriptive types might also be a piece of a given exploratory research or even explanatory research (Saunder *et al.,* 2007). According to Saunders *et al*.(2012), explanatory types aim "*to study a situation or problem in order to explain the causal relationships between variables"* (p. 172), and they are conducted to answer a question that is designed to explain the presumed causal link in real life interventions that are too complex for survey method. Moreover, case study is an empirical inquiry that enables the researcher to get in depth investigation of the research phenomenon within its real-life context, and there are many more variables of interest than data points besides the utilization of multiple sources of evidence (Yin, 2013).

In terms of the number of case studies, they can be either single or multiple. The single one is usually undertaken when the case is considered as critical, typical, representative, and unique or to examine a certain phenomenon (Saunder *et al.*, 2012; Barbour, 2008; Yin, 2007). Multiple case studies usage is usually considered if the researcher has some interest in more results and is having enough amounts data resources which provide stronger evidence to the research inquiry through their vigorous findings and great benefits when particularly used to investigate a phenomenon that is slightly understood and much is still to be explored (Yin, 2009; Saunders *et al.,* 2007; Yin, 2003). Within multiple-case studies, study factors are individually examined for each case for the purpose of underlying the replication logic, which results into the main findings and the researcher can make comparison between the selected cases in order to explore the differences among theme (Barbour, 2008; Eisenhardt, 1989).

Long and short case studies are widely used in many SCM literature (Chopra & Meindl, 2010; Lysons & Farrington, 2006; Mentzer, 2004). In addition, it is argued that the in-depth case study approach allows a deeper insight of the researcher into the field of research within a real-life context. Moreover, this method is particularly useful for the analysis of the various stages of a supply chain. As for developing an in-depth insight of individual main SC stages, the exploratory aspects of multiple case studies are proved to be useful since they provide multi-dimensional as well as flexible supply chains assessment through in-depth exploration. They also allow the researcher to identify relatively major complex areas and events across the chain. As a result, it is possible to collate a wider information spectrum for enhancing academic research and/or theoretical development for beneficial effect to various key personnel across various supply chain stages (Soosay *et al*, 2008).

Since theoretical framework on IS at horizontal coordination in supply chain management in general, as well as in the context of disaster relief logistics and the community of humanitarian organizations, is underdeveloped in the literature and still in its early stages, the researcher sought evidence from interviews and documents in order to explore the research phenomenon that could not easily be distinguished from its context. A case study is the most appropriate research methods to achieve the research aim and objectives. Furthermore, multiple-cases were considered as appropriate for this research.

There was great need for using a number of case studies and their findings so as to allow for the cross-case analysis for further building of theory in the context of information sharing and its barriers at horizontal coordination of SCM. In addition, the strategy of multiple cases was applied for the purpose of providing replication richness and logic of information for the purpose of validating the findings. As well, qualitative multiple case study approach with a holistic research methodology was found valuable and appropriate mean in order to achieve this research aim and objectives. According to Saunders *et al*. (2009) and Yin (2009) case studies approach allows the researcher to have a holistic view of the phenomenon under investigation and examination within a real-life context by exploring, why, how and what was happening in a current situation. Thus, this approach was chosen for being the most effective mean in order to obtain rich data.

In case study research, the unit of analysis is considered very important element since it determines how the researcher can measure variables or themes (Yin, 2003). Miles & Huberman (1994) defined the case as "*a phenomenon of some sort occurring in a bounded context. The case is, "in effect, your unit of analysis*" (p. 25). In other words, the unit of analysis represents a kind of case that the variables or phenomena of the research problem refer (Collis & Hussey, 2003). In this research the unit of analysis is the humanitarian organizations that were assessed for information sharing barriers and embodies a series of actions to overcome these barriers. A common criticism of case study method is argued to be the lack of rigour and possibility of bias for the analysis of the qualitative material. Thus, a careful research design can reduce these criticisms (Patton 1990; Yin 1989) through different approaches such as validity and reliability in order to increase the degree of integrity of the conducted qualitative research (Yin, 2003). More clarification about the validity and reliability issues of this research are in the subsequent sections.

4.4 Research Methods

Research methodology covers the scope of the study, data collection and analysis, conclusion and recommendations (Flick, 2009). Quantitative and qualitative research methods are used widely in business and management studies (Saunders *et al.*, 2009). Quantitative research examines relationships between variables, which are measured numerically and analysed using mathematical processes such as statistical techniques. This type of research is generally used for development of hypothesis that can be tested and the theories that can be generalized (Saunders *et al.,* 2012). Quantitative research usually has its basis in positivistic philosophy through the collection of data that requires a deductive approach with the focus on testing theories and generalization (Bryman & Bell, 2007).

Qualitative research is concerned with constructing theories from data collected and accumulated during the research (Burns, 2000; Miles & Huberman1994), and includes the use of qualitative data to understand and elucidate the social phenomena (Myers, 2009). Qualitative research includes checking on the characteristics or qualities that cannot be presented on a numerical value (Brannen, 2005). It is a kind of research that focuses on phenomena that takes place within natural settings and focuses on phenomena within their complexity (Hassard, 1993). Qualitative research encompasses methods such as observations and interviews to observe the behaviors and perspectives of the respondents (Saunders *et al.*, 2012). Qualitative research transforms data into findings that refer to the ethos of respondents and situations (Hyde, 2000).

Qualitative research provides a strategy that emphasizes words rather than quantification in data collection and analysis and concerns about how the meaning of words are constructed. The data is rich enough to generate deeper insights and understanding of the phenomena. It can also form theoretical basis where none exists that supports an inductive approach based on the interpretation which assumes that people create and associate their own subjective meanings of the reality as they interact with the world around them (Cameron & Price, 2009; Flick, 2009; Bryman & Bell, 2007). Research design provides the overall framework for research data collection and formulation (Saunders *et al.*, 2009). By contrast, the research method choice determines the data type to be collected while resolving the problem (Flick, 2009).

4.4.1 Qualitative Research

This study aimed to explore information sharing barriers across the humanitarian supply chain so as to interpret phenomena based on multiple perceptions of participants and meanings of events as well as processes attached to them. Therefore the researcher chose qualitative research method in order to provide a better account about the research phenomenon, including the complex group behaviours in terms of their thinking and their perspectives and to identify interrelationships among various dimensions as a result of interactions and perceptions among the target population. As noted by Brannen (2005), systematic and structured tracking research mechanisms are very essential for effective tackling of IS challenges at horizontal coordination in HSCM. The use of qualitative method in this study was critical for determining real perception of the study subjects about effects of IS in HSCM. Qualitative research is always exploratory in nature, and may include physical observation and desktop research. Table (4-2) illustrates the main differences between qualitative and quantitative research methods.

Table (4-2): Differences between Quantitative and Qualitative Research

Quantitative Research	Qualitative Research
Numbers	Words
From perspective of researcher	From perspective of participants
Testing Theory	Building Theory
Deductive	Inductive
Static	Process
Structured	Unstructured
Generalization	Contextual understanding
Hard, reliable data	Rich, deep data
Positivism	Interpretivism

Source: Bryman & Bell (2007)

This study used qualitative paradigm to allow description and narration of the experience of the people before making a conclusive meaning from it (Morgan & Smircich, 1980). Using qualitative therefore allowed the researcher to investigate the research phenomenon in greater details about participants' knowledge and experience. It also provides the researcher with a great opportunity to focus on the problem to a greater depth based on varied number of lenses (Brannen, 2005). Following naturalistic approach allows the researcher to answer the research aim and objectives by identifying the barriers to effective horizontal coordination in HSCM (Brannen, 2005). For instance, the researcher is privileged to gather data on how participants share their opinions regarding logistics information and decision making information through the interview sessions.

Qualitative paradigm was considered since they are used to explore experience and meanings that people build from their own individual experiences (Saunders *et al.*, 2012).

In general, qualitative method was used since it is flexible, and thereby allowed the researcher to gather sufficient data on social, institutional as well as environmental conditions pertinent to this study (Yin, 2009). The method was preferred for establishing and understanding experiences, perspectives or thoughts of participants (Hiatt, 1986) since they explore meaning, purpose together with reality as was the case for this thesis. Qualitative methods comprise of various interpretive and material practices which visualize the world with overall global transformation. Furthermore, the method transforms the world into various representations, including field notes and interviews, suggesting that it is rooted in interpretive to naturalistic global perspective, which was the approach used in this thesis. Qualitative researchers focus on things within their natural settings with an attempt to gain understanding and interpret phenomena with regard to the relevance they gain from people (Denzin & Lincoln, 2005). Qualitative exploratory case studies were used to explore barriers to effective IS in horizontal coordination of HSCM and their implications on the overall performance among SC partners.

4.4.2 Qualitative research method and multiple -case studies

Qualitative case study and inductive approach were used in this study to allow the researcher to capture rich insight data through the interaction with respondents. The flexible nature of qualitative methodology made it feasible to obtain knowledge to grasp the nature of research problem behind the barriers to share the information among actors (Miles & Huberman, 1994). Moreover, case studies have been widely used in the SCM context (for instance, Mangan *et al.*, 2012; Chopra & Meindl, 2010). Furthermore, the research questions in qualitative studies are designed based on people’s knowledge, understandings, experiences and interactions which are meaningful properties of the social reality and data collection is based on key themes and explain the data analysed which are subjective (Yin, 2007).

Use of interviews and observations to examine the research phenomenon in its natural setting is typical of exploratory and explanatory research (Yin, 2003). On the other hand, multiple-case designs permit the cross- case analysis for a better theory building (Bryman & Bell, 2012) and strengthening the findings of a single-case (Yin, 2009). Qualitative multiple-case studies also allow comparison between individual organizations or cases. The current study used organizational record review, case studies and interviews during qualitative data collection. The questions were designed in such a way that all the respondents were able to share their opinion and perceptions about barriers to IS at horizontal coordination in HSCM. Indeed, case studies provided the opportunity for a holistic view of the events associated with horizontal coordination among humanitarian actors and how they share information.

The research involved different humanitarian organizations that provide services to Syrian refuges in Jordan to explore the barriers and challenges to share information between them and they can be bridged for better horizontal coordination. Two stage- analyses were employed, starting with each case study independently and then cross cases -analysis to provide a holistic view of the research and generate overall findings (Yin, 2007). From the comparisons between numerous case studies, subthemes were provided and linked to the key themes to explore the barriers of sharing information in the context of horizontal coordination of SCM. This increased the capability of reliability and validity of the findings to develop new theory.

4.4.3 Qualitative Research Methodology

Although qualitative research has been used over decades in various disciplines (Flick, 2009; Barbour, 2008), it is still rare in HSCM context. More research is therefore required with empirical data collection through case studies or other qualitative methodologies (Kovács & Spens, 2011). There are various approaches used in designing qualitative research, data collection and analysis such as research questions, and interviews among others (Williams & Rao, 2007). This study used multiple-case studies to ensure optimum reliability and validity. Besides, this allowed collection of relevant and rich information from participants to generate more accurate conclusions from the findings (Williams & Rao, 2007) and theory building about the research aim, objectives and context of IS across the HSC.

4.4.4 Humanitarian Organizations in Jordan as a research context

Research context indicates where the researcher intends to work. The current research focuses on the humanitarian organizations in Jordan that provide supply services for the Syrian refuges crises such as health, food, shelter, education, water and sanitation and these organizations include (UN-NGOs, International NGOs, National or Local NGOs) working in Jordan.

As a result of increased number of refugees in Jordan due to the man-made disasters (Casey, 2014), beneficiaries demand is notably increasing. Thus necessitates a coordinated network of humanitarian organizations and actors that provide the beneficiaries need through effective coordination and IS in order to achieve a better decision for an effective logistics and supply chain management.

Furthermore, the humanitarian NGOs in Jordan must understand the importance of how information sharing is a key tool for successful horizontal coordination to enhance an effective response of humanitarian supply chain. Therefore this study analysed multiple case studies of humanitarian organizations that provide services to the refugees in Jordan individually and across the cases to determine similarities and differences for a holistic setting of the research. Of note, the use of case and cross-case analysis allowed comparison of similarities and differences in each case and among the cases in order to validate the relationships of information sharing barrier and their effects across the supply chain.

4.4.5 Research design

Research design is usually defined as a plan and procedures for the research that includes data collection and data analysis (Creswell, 2013) .Though, case study research has always been criticized in quite a number of times due to its lack of rigor, scholarly researchers utilizes design explanations from researches done previously Eisenhardt (1989) and the present perspectives so as to ensure the reliability and validity of this research. Furthermore, Mouton (1996) argued that research design is the "plan and structure "can help the researcher to maximise the validity of the research findings (p. 175), which is supported by Yin (2003).

"colloquially a research design is an action plan for getting from here to there*, where 'here' may be defined as the initial set of questions to be answered and 'there' is some set of (conclusions) answers"*.

In this study, the researcher developed the research methodology and design for the purpose to identify the barriers of information sharing at the horizontal coordination of supply chain in humanitarian organizations. The present qualitative research comprises of three stages of research methodological designs, stage one started with the research problem, then a holistic picture that surrounded the research problem was reviewed in order to get deep understanding of business and humanitarian SCM and the relevant fields, after that the research gaps was identified and the research aim and objectives also was determined (chapter 2). After reviewing the research empirical context to understand the humanitarian sector in Jordan and to have a holistic picture the actions of the humanitarian organizations with focus on information sharing, the stage two of the current research started. Apilot study of this research was employed, a semi-structured interview with eight experts from different humanitarian organizations was used to explore the information sharing issues at horizontal coordination focusing on barriers, relevant data was collected by the researcher and analysed in order to identify the information sharing barriers. Chapter five of the current research discussed the findings from the semi-structured interviews of the pilot study.

Multiple-case study was employed in the third stage of the present research, this stage included a case protocol to collect and analyze the data using semi-structured interviews and archival records were used in data collection, and then data was analyzed using thematic analysis as a strategy to find the research key themes. Analysis employed two phases of analysis: during phase one each case was analyzed individually to generate the findings; in the second phase cross-case analysis was employed in order to obtain the similarities and differences between the case findings and key findings were generated and refined. A report for the case study results were reviewed by the participant for research validity and reliability issues.

Prior to main data collection, the researcher carried out a pre-test of the research tool to ensure that any ambiguities and unnecessary issues are addressed prior to the main data collection exercise. Moreover, the pre-test help to ensure that the questionnaire elicit the necessary and clear information, with proper question sequencing, wording and feasible methods and interview time. All the selected participants were prepared psychologically for the field activity through emails and text messages.

Only qualitative data was collected during this study. Interviews, archival records and other secondary literature were all utilized during the collection of qualitative data. The researcher did not rely on one data source. The researcher mixed the data so that accurate conclusion on the study question could be made (Saunders *et al.,* 2007). Only one type of interviews was conducted (i.e.face-to-face interview). In these interviews, the researcher focused on open-ended questions. The open-ended questions were to obtain insights, views and perceptions of interviewees on the barriers of information sharing on humanitarian supply chain management (Brannen, 2005). Open ended questions were deemed fit since they allowed the interviewees with freedom to answer the questions according to their own understanding. This of course resulted into very detailed answers for evaluation. In addition, interviews enabled the researcher to interact freely with the participants and they were able to explain their points in details.

Moreover, this study employed systematic reviews design by which published literature on information sharing issues across the supply chain was gathered using explicit as well as accountable methods as described by Cooper & Hedges (1994). There are various successful systematic reviews methods particularly on impact of interventions as they synthesize findings from experimental controlled study designs. However, systematic reviews methods may be used in all research areas, and thereby vary widely as in the case of primary research (Gough, 2007; Gough &Thomas, 2012). Systematic review research design which involved review of Archival records (documents and records) and other secondary literature was also developed in this study for the purpose of collecting secondary data on the topic of information sharing barriers at horizontal coordination in humanitarian supply chain management (Saunders *et al.,* 2007). Comparative analysis of data from different organizations involved in the case study was applied. Literature emphasizes that the main purpose behind gathering of records and documents is for the purpose of examining the participants and the phenomenon into great details (Jick, 1979). Based on the purpose of this study, the researcher collected reports and archival documents from relevant persons and offices. The archival documents were analysed and compared with the actual practices undertaken by the study participants from interviews conducted. The advantage of the archival documents is the fact that records and documents can provide plenty of information (Yin, 2009). In the current study the documents and records provided plenty of information. The researcher needed to follow through the major objectives and goals of such archival statements before coming up with conclusive remarks. Figure (4-2) below shows the flow of procedures and methods that were undertaken to implement this study.

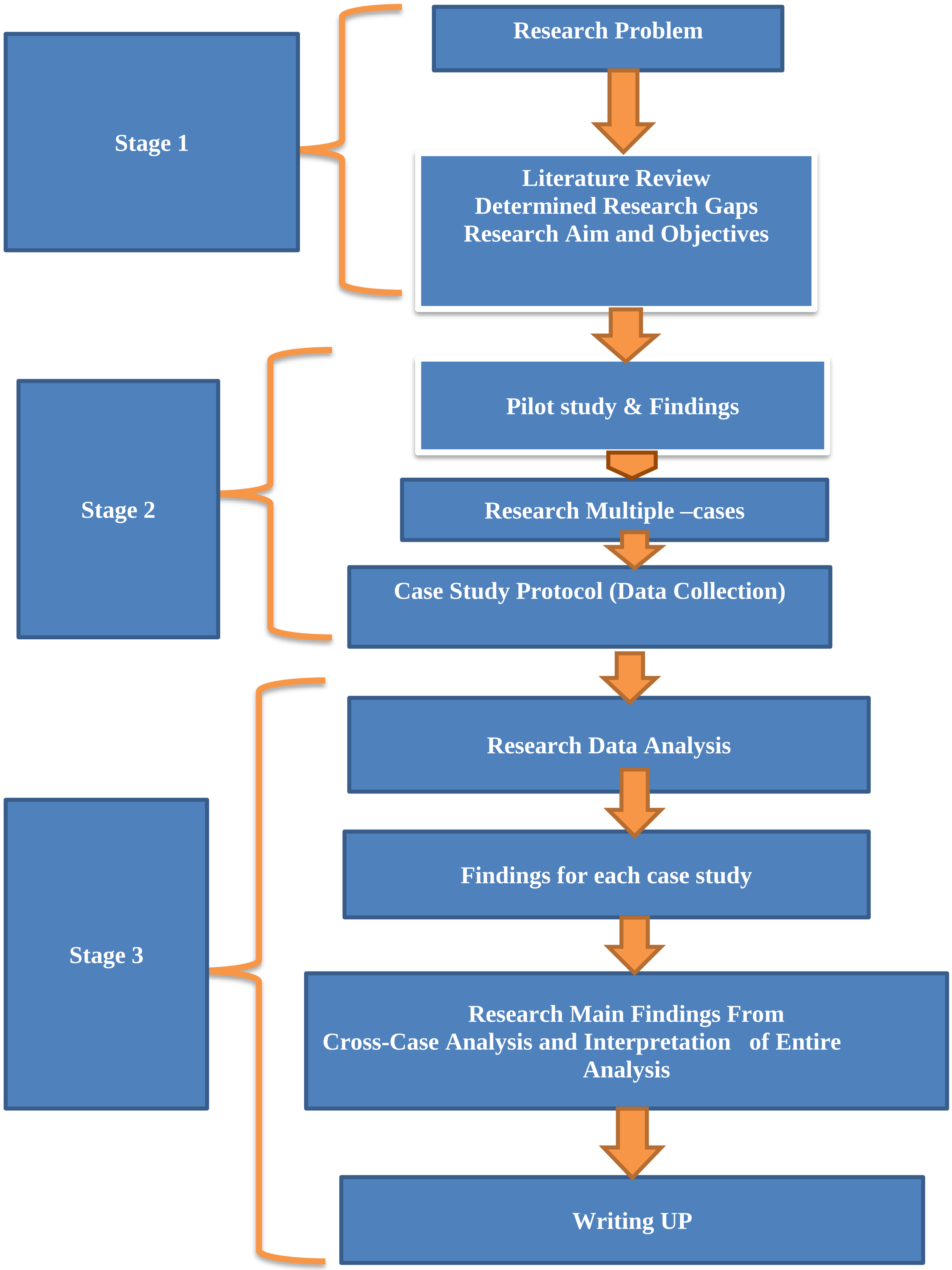


Figure (4-2): Methodology structure and design of qualitative research

Source: Developed by the researcher

4.5 Time horizon

An exploratory research can be classified into longitudinal and cross-sectional. A longitudinal kind of study is different from the cross-sectional (sometimes called as one-shot study) in the fact that fixed samples of population usually remain the same over a given period of time (Saunders *et al.*, 2009). Cross-sectional research is usually a one off type of data collection from a sample of elements selected from the population of interest at a given point in time. The time horizon of this research is cross-sectional study, since the data was collected from the respondent in the humanitarian organizations at one point in time (Bryman & Bell, 2012). The study in this case selected a purposive sample of experts in humanitarian organizations involved in information sharing, coordination, logistics and director or program manager from whom data was collected.

4.6 Data Collection

Data collection is an important part of the research. There are two types of data collection in business and management research: primary and secondary data (Saunders *et al.*, 2007) which will be discussed below. Both primary and secondary data were used in the current study. Techniques of data collection depend on the type of data: qualitative or quantitative (i.e. text, or numeric respectively). Techniques that are used in qualitative research include observations and interviews (Flick, 2009). On the other hand, structured interviews, questionnaires other techniques are used in the quantitative research (Sekaran, 2003). In the present research, the data is collected based on multiple-case studies protocol in order to explore some issues related to various themes. Accordingly, in order to keep a lack of rigour several data collection techniques were used.

A case study protocol is a written statement of what the researcher is trying to achieve and the plan to achieve it. Especially, the case study protocol need to be a clear link between the research questions, the data required for such questions and how to collect and analyze them. While preparing the protocol one should anticipate for the potential problems in the study so as to devise strategies in advance for dealing with them. This protocol allows systematic data collection throughout the different interviewees, and flexibility to respond to emerging issues during fieldwork (Yin, 2009). A case study protocol is necessary in all case studies; it should have the aspects described in table (4-3).

Table (4-3): Case study protocol aspects

1- Overview	The researcher developed a statement of the overall aim and objectives to exploring information sharing barriers of supply chain management between humanitarian organizations in Jordan at the horizontal level of coordination. The research objectives were developed based on the research topic and aim of the study.
2- Field procedures	The researcher developed fieldwork procedures, starting with study design identification, sample size determination and sampling technique and selection of participating organizations , choice and development of research tools, including how to gain access and capture data, time plan for data collection, analysis and presentation for each case
3- Research questions	The researcher developed research questions from the research objectives which were the center of the current study. To ensure that the right information was gathered to answer the question, the researcher developed clear, specific, attainable and well linked questions to the theory/literature where appropriate and research objectives.
4- Data collection matrix	The researcher developed a matrix (table) to guide the types of data collection and how they are related with each other and to the research questions.
5- Data analysis and case study reports	The researcher analyzed collected data using within case and cross-case thematic analysis of participants' data and systematic reviews of published articles and archival records of participating organizations.

Source: Yin (2009) and Remenyi *et al.*(1998)

Based on these aspects, the aim of case studies is to identify the information barriers at horizontal coordination of SCM in humanitarian organizations in Jordan.

The research followed well- structured procedures such as, the availability of the resources required and chose the right time for interviews. Also in this research, each part in the case study protocol is linked to the research objectives to achieve the research aim.Finally ,the researcher applied the final aspect of the case study protocol by choosing appropriate table to link the protocol questions to the research objectives , based on Yin's (2009) recommendation that when you analyze and report the research finding(s), the researcher should draw up a matrix (table) that link each question in the case study protocol and the research objectives to obtain a valuable result.

This study employed interpretaive epistemological perspectives to explore the social world of information sharing across the humanitarian supply chain relationships with a view to understand the barriers of information sharing to effective horizontal coordination. Since the focus of the research is on the conscious awareness of the world based on opinion and believes, interpretivism approach was deemed critical to provide clear understanding of the research phenomenon under investigation as stated by Saunders *et al.* (2009). In order to generate adequate information, the study combined interpretivism and induction approaches to delve on the research topic under holistically about supply chain management issues as noted by Eisenhardt & Graebner (2007). Moreover, induction is used to study important human aspects, understanding the context of the research and gather qualitative data, and it is flexible to change the structure of the research implementation process at any statge (Cameron & Price, 2009).

Although the current research did not use observation method as in inductive approach, the researcher collected data, performed analysis and then linked the findings with theoretical perspectives based on research aim and objectives in order to establish a given generalization.

Based on these aspects, the aim of case studies is to identify the information barriers at horizontal coordination of SCM in humanitarian organizations in Jordan. Moreover, inductive process was used due to the qualitative research design was employed by the researcher to investigate the information sharing barriers in humanitarian supply chain management as stated by Saunders, *et al.* (2007), and the fact that it did not require testing of the identified theories (Yin, 2007). It was believed that inductoive approach was critical for exploring social phenomenon in order to identify patterns that can be used to build a theory (Hartley, 1994).

4.6.1 Primary data

According to Saunders *et al.* (2007) primary data can be defined as *"new data collected for the purpose and the problem solving of present research*" (p.36). Primary data includes sources that collect data through measurement of phenomena within the real world, detached observation, without disturbance by any intermediate interpreter. It is essential to use the primary data in the qualitative research to reach the aim of the study (Saunders, *et al.*, 2007). Moreover, exploratory study is a kind of research undertaken within an area that has never been studied before or has limited studies undertaken and in which the researcher seeks to develop initial ideas and a research which is more focused research aim (Saunders, *et al.*, 2007). In the present research, only interviews were used as the main sources of primary data during collection process (Saunders *et al.*, 2009).

Prior to the interview, all the selected participants from participating organizations were contacted in order to inform them on the overall study objective. Primary data was collected by use of open-ended interview questionnaire from the subjects. Although the interview questions were standardized, there was room for probing where necessary as recommended by Bryman & Bell (2012). The subjects were interviewed using identical questions, although they were worded in a way to ensure open-ended responses (Gall *et al*., 2003). Therefore the participants could make much detailed contribution and the researcher could also ask probing questions for follow-up. However, Creswell (2009) argues that this form of interviews pose difficulties in data coding largely because the participants are allowed to express themselves in details and therefore presents difficulties in extracting similar themes or coding the interview transcripts. However, Gall *et al.* (2003) argues that open-ended interviews are advantageous since they are associated with minimal researcher biases, especially during the interviewing process where many participants are involved.

Observation

In qualitative research, observation is considered as one of the data collection methods (Saunders *et al*, 2012).It is recommended for use as another techniques to construct more information (Flick, 2009; Yin, 2009). Polit *et al* (2001) noted that observation is important method of collecting data when other methods are "often inadequate for dealing with activities and behaviors of which individuals may be unaware or unable to describe by themselves" (p.334). According to Saunders *et al. (*2009), the method basically includes "the systematic observation, recording, description, analysis and interpretation of people's behaviour" (p.288). Sekaran (2003) differentiate between *nonparticipant-observer* and *participant-observer*. In non-participant observation, data is being collected from the organization by the researcher without getting involved in the organizational system. And the researcher usually will enter the research setting with the knowledge of what and why to observe (Yin, 2009, Miles & Huberman, 1994).

On the other hand, the researcher becomes a part of the natural setting to observe the organizational dynamic system during participant-observation. This is without pre-determined opinion about type of data to be collected or how it will proceed (Yin, 2009; Miles & Huberman, 1994). In addition, Sekaran (2003) distinguishes between observations into: structured and unstructured observations. In Structured observation, predetermined list of activities for the research phenomenon under investigation is determined. On the other hand, the unstructured observation is used at the start of the research stage and there is no plan of the type of data to be collected which requires recording of everything observed by the researcher.

Observation is a method of data collection which is not utilized in this study since it was not allowed for the researcher to watch the behaviors, events, as well as noting the physical characteristics within the natural setting because of the privacy policy of humanitarian context and organizational regulations in addition to the security concerns. Moreover, the researcher was not able to accompany humanitarian relief specialists to active crisis areas because of safety and security concerns.

Interviews

According to (Yin, 2009), interview data is the main source of information for qualitative research, and the use of in-depth interviews is appropriate form of data collection within a case study. Moreover, interviews are described by Barbour (2009) as "the gold standard of qualitative research which involve a somewhat ratified, in-depth exchange between researchers and researched". In the business and management research interview, much information are the main goal of the reviewer such as interviewee behavior, norms, attitudes, beliefs and values (Saunders *et a l.,* 2009; Bryman & Bell, 2007) based on the interview as data generation method.

There are three types of research interview: structured, semi-structure and un-structured. Structured interviews are referred to as questionnaires that are based on standardized and predetermined set of questions to collect quantifiable data as part of a survey approach and usually is closed ended and fixed choices (Bryman & Bell, 2012), provided that no opportunity for dialogue or discussion to occur. On the other hand, unstructured interviews allow for completely open dialogue and discussion between the researcher and the participant (Saunders *et al.,* 2009), and the questions can be described as informal questions, and the phrasing of the questions change from one interview to another (Bryman& Bell, 2012). On the contrary, if completely unstructured interview is employed, and then worries can be raised if all of the applicable data relevant to the research question will be collected (Saunders *et al.,* 2009).

The current research adopted a semi-structured interview as appropriate type of the interview to obtain in-depth information from the research participants about the information sharing barriers behind an effective horizontal coordination of supply chain in humanitarian organizations. This is because questions and their sequence are presented in a flexible manner and open discussion sticking to the interview schedule assuring that relevant and in depth data are collected within the dimension of the overall research aim (Bryman & Bell, 2007). Eight case studies were managed with, two UN-NGOs organizations, three international humanitarian organizations and three local humanitarian organizations. In total, 32 face-to-face semi-structured interviews were conducted on average of one hour with the participants who are involved in information sharing, coordination and logistics action with senior managers. Also, face-to-face semi-structured interviews were employed for the purpose of the quality of the information captured.

- **Interview design protocol**

In the current research, semi-structured interviews were adopted. This type of interviews allow comparative research since same questions have been answered by different respondents; it also allows flexibility in presenting the same questions facilitating the respondents to use their own language, values, beliefs and knowledge (Wengraf, 2001). The interview questions were designed in order to reflect each of the themes in the research aim and objectives. Three to four managers were selected from each case study that are in charge of SCM, including director manager ,programme manager, information officer, logistic manager and field officer. The interview protocol questions were divided to six sections, respondent information, humanitarian organizations information, supply chain management information, coordination, and information sharing and barriers questions (Appendix 5). Interview protocol was carried out as shown in table (4-4).

More specifically the Interview protocol includes the following steps: -

1. Identify the aim and objectives of the research study.

2. Prepare interview schedule and questions that were used to achieve research aim and objectives. Purposive sample of international and local and UN managers of humanitarian organizations were selected in order to achieve research aim and objectives.

3. Fix an appropriate date for the interview.

4. Notify the interviewees that interviews information and their answers are kept strictly confidential issue. Only research team has access to these answers.

5. Asked the interviewees if they had any question or enquiry, before the interview beguns. And ask for the permission to start data collection.

6. After the completion of the interview questions, the interviewees were asked whether they had anything to add such as comment or recommendation.

7. Each interviewee was thanked for cooperation and participation.

8. Transcript the audio record immediately due in order to maintain the interview context.

9. Check transcripts against each recorded interview to ensure the accuracy of the transcript.

10. Interview transcripts sent to the interviewee in order to confirm their responses.

Table (4-4): Interview protocol

Aim: To gather information about the participants' interviewees.	
Participants information	Questions: 1.1, 1.2, 1.3, 1.4.
Aim : To gather information about the participants organizations	
Organization information	Questions: 2.1, 2.2, 2.3, 2.4, 2.5 and 2.6.
Aim : To gather information about supply chain management in humanitarian organizations (objective 1)	
Supply chain management in humanitarian organizations	Questions: 3.1, 3.2.
Aim: To gather information about supply chain management issues (Coordination, information sharing) in humanitarian organizations. . (objective 2)	
Coordination issue	Questions: 4.1, 4.2, 4.3.
Aim: To gather information about information sharing and barriers at horizontal coordination of SCM in humanitarian organizations. . (objective 3)	
Information sharing issue (methods to share, barriers and actions to bridge the barriers).	Questions: 5.1, 5.2 (5.2 a, 5.2 b, 5.2 c, 5.2 d), 5.3, 5.4.
General relevant information's	Questions :6

4.6.2 Secondary data

Saunders *et al. (*2009) and Bryman & Bell (2007) defined secondary data as "data *that have been already collected published for some other reason"*), and these data can be different forms archival records (e.g. Organizations emails, websites and reports), previous surveys (e.g. academic surveys) and several resources (e.g. books, government publications). Secondary data will be used to complement primary data by enhancing understanding regarding various aspects. Secondary data is useful since it can provide extra evidence or arguments, particularly about the wider context (Saunders *et al.,* 2007). According to Bryman & Bell (2012), it is advantageous to use multiple data sources in order to achieve a comprehensive research based on case study. However, it is necessary to take a significant notice to the contextual conditions affecting the phenomenon under investigation (Yin, 2003).

This study undertook the collection of secondary and primary relevant data in order to gain a holistic overview of several issues regarding the research topic. In addition to the necessity of using secondary data through providing several resources of evidence that strengthen the research findings; there are advantages such as saving in resources (e.g. time and money). Secondary data that are used in this research such as humanitarian organizations websites and reports, humanitarian organizations portals, humanitarian documents, humanitarian organizations records that may include numbers, locations maps, figures and tables, budgets). During data collection process, triangulation was done for secondary data from peer reviewed journal articles and their documents. The aim of triangulation is to ensure reliability in collected data (Saunders *et al.*, 2009). In general, it is much less expensive than to collect the data from the field and also it helps the researcher to obtain more information (figures, tables….) for more understand of the research phenomena. *Thus,” larger data can be analysed, for example data collected by governmental surveys. Whilst some of the disadvantages are that the data may be inappropriate to the study aim, and, the quality of data demonstration can be bad* “(Saunders *et al.*, 2009).

Secondary data are usually utilized together with other primary data collection methods. It is however also possible to utilize secondary data on their own (Saunders *et al.*, 2009). For instance, with regards to history research within a strategy of archival research (Saunders *et al.*, 2009). Documented secondary data include materials which are written like notices, minutes of meetings, correspondence, reports to shareholder, and transcripts of speeches together with public records. Written documents might also include journals, books and articles of magazine and newspaper (Saunders *et al.*, 2006). These are usually important sources of data on their own, together with medium for storage for all the data that have been compiled.

It is possible to use written documents in the provision of qualitative data for instance the espoused reasons for decisions made by the manager. They can also be used in generating statistical measures like data on absenteeism and profitability that has been derived from the records of the company (Saunders *et al.,* 2009). Secondary data also comprise of non-written materials such as video and voice recordings, drawings, pictures, and television and film programs together with the data base of the organizations. Such data can be analysed both in a qualitative and quantitative manner (Saunders *et al.*, 2006). Additionally, they can be used in helping to triangulate the findings based on other existing data, like written documents and the primary data that has been collected from interviews and observations.

Archival records

For the purpose of this research, the humanitarian organization (UN, International and Local organization) archival documents such as annual reports, website and booklets were analysed and compared with the actual practices undertaken by the research participants and from interviews conducted. Also, these records and documents provided the researcher with plenty of information (Yin, 2009). The archival statement documents plus other textbooks with the content related to humanitarian supply chain management provided a large amount of data with regard to the extent to which of information was shared at horizontal coordination in humanitarian supply chain management. The analysed data of archival records were used to support the research results.

4.6.3 Sampling

Sampling can be defined as the process of selecting the right individuals, objects, or events for research (Sekaran, 2003). The key purpose of sampling is to construct a study group that could be 'representative' of the study population (the case of quantitative research) or 'relevant' to aim, objectives and understanding of the research phenomena that is pursued in the qualitative research (Schwandt, 2007). However, Gill & Johnson (2010), inform that when designing and planning the research, selection of sample size is a major concern for researchers. Iacobucci & Churchill (2005) suggested six steps to be followed when the researcher drawing up the sample (Table 4-5) .

Table (4-5): Steps procedure for drawing a sample

Step 1	Identify the target population
Step 2	Identify the sample framework
Step 3	Select a sample technique
Step 4	Determine the sample size
Step 5	Select the sample participants
Step 6	Collect data from the participants

Source: Iacobucci & Churchill (2005)

- **Study population and sample frame**

The target population of this research is the UN-NGOs, the international and national humanitarian organizations in Jordan that provide supply services for the Syrian refugees like food, shelter, education, health, water and sanitation. To reach the sample frame, different sources of government and UN and international and local organization websites and forums and the ministry of planning and international cooperation were searched for the purpose of the required organizations. Accordingly, the research sample frame included seniors and managers or directories who are involved in the process of coordination and information sharing in the humanitarian organizations that provided service for the Syrian refugees like food, shelter, education, health, water and sanitation.

- **Data collection techniques**

A number of methods in sampling techniques exist in order to reduce the amount of data the researcher needs to gather by considering subgroup rather than all possible cases (Saunders *et al.*, 2007). Two main types of sampling techniques in research are present. First is the probability (representative) sampling, and the second is the non-probability (A purposive or judgmental) sampling (Bryman & Bell, 2007; Saunders *et al.*, 2006; Sekaran, 2003). Probability sampling is commonly used in quantitative research; this means an equal opportunity or probability is given to the population sample that is chosen as a sample by the researcher and is representative of the whole population. On the other hand, non-probability sampling is more associated with qualitative research, and the sample chosen by the researcher does not represent the whole population (i.e. purposive sample). This means that the distinction between them lies in the ability to generalize the findings. In probability sampling, findings can be generalized unlike in non-probability sampling findings.

In qualitative research the main objective of sampling is to accumulate specific cases, which can elucidate and deepen the understanding of the phenomenon under investigation (Neuman, 2006). While in the quantitative research the main objective of sampling is to acquire a probability or a representative sample which can explain and describe certain phenomenon. A purposive or judgmental sampling is based on the assumption that enables the researcher to understand as much as possible and select cases that will be able to satisfy the research aim and objectives. This form of sample is suited for small size and in-depth studies such as case study research (Saunders *et al.*, 2009).

Based on the research aim and objectives, the purposive sampling was adopted as the appropriate approach for the current study. This is because the sampling approach ensures that it covers all the crucial related constituencies of the study, and it includes some diversity in each crucial criterion that allows us to explore the information sharing barriers and how to bridge these barriers (Ritchie *et al.,* 2003). Studies have raised knowledge and concern about the effects of the study dimension (Mangan, *et al.*, 2004).

Accordingly, to understand information sharing barriers and how to bridge them, the target interviewees of this study were divided into three kinds for each case study: First, the respondents from the director or programmer's managers'. Second, the respondents from coordination and information centre managers. And third, the respondents from logistics and supply chain manager in the humanitarian organizations in Jordan. Other people who might have been involved in decision making regarding information sharing and coordination were also included in the study because of their ability and understanding of the issues that were under investigations. The questions were framed after reviewing the relevant literature with the aim of exploring information sharing barriers at horizontal coordination of supply chain management in humanitarian response (Mangan *et al.,* 2012). Interview questions were reviewed by senior academics as well as senior managers who are involved in the process of information sharing and coordination between different humanitarian organizations .

- **Sample size, select the participants and collect data**

Eight relevant humanitarian organizations (international , national and UN-humanitarian organizations) which responded and were happy to participate in the research study and also were involved in the coordination and information sharing in the process of supply service such as food, shelter, education, health, water and sanitation .Then the data collected from directors, managers and the individuals who were directly involved in the process of coordination, information sharing, logistics and those who were in the level of seniors and managers . In order to collect the data, four to five managers were selected for each case study, and they included programme /project manager or director, information centre or coordination officer, field officer, logistic manager.

4.6.4 Triangulation

Triangulation can be described as the rationale for utilization of numerous numbers of sources of evidence for the purpose of generating a strong finding (Yin, 1994). According to Saunders *et al.* (2009), triangulation can be defined as "the use of different data collection techniques within one study to ensure that the data are telling you what you think they are telling you". It is very important to identify all the topic aspects along with increasing relevant data for the purpose of ensuring high reliability and validity of the existing different issues related to the phenomenon being studied (Saunders *et al.*, 2007). Furthermore, the term "Data Triangulation" was discussed by Cameron & Price, (2009) and focused on the value of collecting data from a range of different sources. Multiple data sources can always provide a broader range of some attitudinal, historical and observational issues and can also assist in preventing some form of subjective bias (Bryman & Bell, 2012). Triangulation usually reflects a form of corroboratory mode to ensure that the findings together with the conclusions generated from the case studies are somehow more convincing and accurate with regards to other sources of information (Yin, 2003).

This study has utilized triangulation of data and involves a number of sources of data collection (Yin, 2009). The data in this study was collected from primary data (interviews, in each of the case studies) and secondary data (documents, archival records and reports) to achieve the research aim and objectives. In addition, data gathered through observation and analysis of the protocol data can improve the overall generalizability of the research (Hayes, 1986). Eventually, checks are made to see if the study findings are acceptable and in accordance with respondent feedback (Miles & Huberman, 1994).

4.6.5 Pilot case study

According to Polit *et al.* (2001), a pilot study is a "small scale version or trial run in preparation for a major study". It is used to understand the study phenomena to ensure success in the main study; to develop the research plan and questions; to determine the appropriate research participants; and to convince other individuals in other organizations that the main study is worth supporting (Polit *et al.*, 2001; Baker, 1994). Furthermore, pilot study is an integral part of guidance on how to appropriately develop the interview protocol. It is also used to explore the research objective in order to obtain a deep understanding of the capabilities affecting clarity of the new phenomenon (Saunders *et al.*, 2007).

A pilot study and exploratory case are similar since they provide some kind of prior theory that helps to inform the interview protocol and refine the case study for gathering data content and developing procedure (Yin, 1994). Pilot study involves the selection of participants, and inquiry and reporting nature. The current research conducted the pilot case study in June 2015, four months before the main interviews and was determined by the ability to access all the necessary information regarding humanitarian organizations (Yin, 2007). The pilot report reflects some clear understanding from the side of the researcher, and should be quite explicit regarding different lessons used for both data collection and design strategy (Mangan *et al.*, 2012), and the findings are not included in the final data-set. This ensures that the relevant respondents understand the issues of the case together with the protocol questions (Yin, 2007). The pilot study also uses informal data collection methods and its findings may lack accuracy (Zikmund, 2000). The current study employed a pilot study to test procedures and validity of research tools in order to make necessary adjustments where deemed fit before implementing the main study.

The pilot cases assisted the researcher to ensure the reliability of the questions involved (Perry, 1998). This was achieved by following-up for case development and its implementation to fill any existing gap within the case study protocol, and the strategy of the case study (Creswell, 2013). Before undertaking the pilot studies, the case study protocol (Appendix 6) was reviewed by three university researchers who are quite familiar with HL and SCM (Perry, 1998). This allowed them to recommend areas of improvement such as need for additional questions on the research phenomena and the need to probe the subjects during the interviews (Perry, 1998). This was done to ensure content validity.

4.6.6 Ethical considerations

Ethical issues are concerned with the morality of human conduct and their crucial role is in the protection of participant rights (Israel & Hay, 2006). The principal ethical requirements during any kind of study were upheld strictly without any intrusions. First, approval of the study was sought from the university before the thesis process was begun. The study only picked on after the university had issued ethical clearance certificate regarding the study topic (Schwab, 2011). Prior to participation in the study, participants were duly informed about the fact that the study is purely for academic purposes and that it was not compulsory for them to respond to the questionnaires. Individual consent was sought from participants using informed consent form and all the subjects had to sign the informed consent form as required by research ethics as recommended by Tashakkori & Teddlie (2003).

Moreover, participants were allowed to withdraw from the study at any time. They were assured of confidentiality and anonymity for all the information they gave, something which was practiced in the latter so as to comply with required privacy policy on research (Schwab, 2011). In the current study, the researcher ensured confidentiality of the collected data from subjects by use of unique identifiers and keeping the completed questionnaires and other related documents under lockable cabinet. Therefore, no unauthorized person accessed the research data except the researcher and the team. All the collected data and the related documents were also destroyed after completion of the study.

Due to the fact that the study also involved review of secondary data, especially from archival records, books, academic journals and articles, authors of these literatures were acknowledge though in text citation and referencing for conformity to plagiarism policy (Tashakkori & Teddlie, 2003). Gathering of information from such documents was conducted using a systematic review design with the utmost integrity and responsibility and at the same time avoiding any form related to misconduct (Walker & Monahan, 1988). The analysis and synthesis of other people's ideas was done in a manner that respect the copyright related regulations on the primary sources; presenting a work which has been plagiarized and is having redundant duplications, contravening public guidelines and ethics, and borrowing data from reports which have insufficient ethical standards (Schwab, 2011).

As a way of avoiding these, all resources that contributed to the development of this research were recognized through in text citation and also by being included in the reference list (Walker & Monahan, 1988). All direct information obtained from different sources has been properly acknowledged just to ensure that ethical standards and principals are adhered to up to the later (Schwab, 2011). Last but not least, ethical approval from relevant authorities including institutions and databases was also granted by the relevant management authorities of the selected cases prior to data collection.

Ethical issues were taken into consideration throughout this research, including the preparation and during the fieldwork, analysis and writing up. Ethical considerations in the current qualitative research included: -

-Interviewees were notified that their responses would be kept strictly confidential (Appendix 7). Only research team had access to these answers.

-Permission for audio recording the interviews was approved by interviewees to guarantee quality purposes of the interview.

-The audio recorded interviews were written as textual transcripts. Followed by, a double-checking with recorded interview in order to ensure the information accuracy.

-University ethics regulation form (R 1) is satisfied; research ethics approval form was filled out and sent to the research office.

4.7 Qualitative data analysis

Qualitative research is comparable to martial arts in many ways (Corbin & Strauss 2014). The approaches used in the collection and analysis of qualitative data are numerous representing different disciplinary, theoretical, and epistemological perspectives (Marshall & Rossman 2014). Yet most investigators focus on a single approach they are familiar with which excludes other existing alternatives. In this regard, effective data analysis integrates appropriate techniques and elements from across epistemological perspectives and traditions (Myers 2013). In the view of the researcher, the philosophical or theoretical foundations offers a framework for inquiry but data collection and analysis approach and the outcomes of these processes that are imperative (Maxwell 2012).

In other words, researchers require an approach that will enable them to present an argument they are familiar with through positioning the approach through which the knowledge was developed (Silverman 2011). With this in mind, a decision to exclude a particular technique due to personal misconceptions or discomforts does not make any sense. Specifically, Creswell & Clark (2007) remind us that qualitative research methods belong to all investigators and a justification of a decision to adopt a specific approach is necessary. The plan and design for a specific analysis is dependent on the general approach adopted and the type of results expected (Ayres *et al*., 2003). As earlier mentioned, this study will be an inductive analysis, which basically contains exploratory orientations.

Qualitative data analysis is defined as the working with the data, organizing data, breaking them into manageable units, coding data and synthesizing them, then searching for themes (Bogdan & Biklen 2003). Qualitative data analysis aims to explore the concepts and themes. Several authors have different thoughts for qualitative data analysis but they have similar general concepts of the analysis.

Based on Braun & Clarke (2006), thematic analysis is also the most common technique employed in qualitative data analysis. This study used qualitative research design with individual semi-structured interviews to assess the study participants. The data collected was analysed using thematic method after determining initial abstract codes as well as categories for each identified theme from the interviews.

According to Braun & Clarke (2006), thematic analysis (TA) is "a method for identifying, analysing and reporting patterns within data." (p. 79). The aim is to minimally organize as well as obtain detailed descriptive data set. Moreover, the method is used to interpret various aspects related to the research topic (Boyatzis, 1998). TA is a basic qualitative analysis method that employs accessible and theoretically-flexible approach in analyzing qualitative data. It involves identification of themes or patterns based on different epistemological as well as ontological positions. Simply stated, the method is used to descriptively to provide a robust and systematic framework for qualitative data coding, which then can be used to identify themes in the dataset that are related to the research question. Therefore, the method offers a flexible but useful research tool which may provide rich, detailed and complex data account. Moreover, thematic Analysis is considered as "the most appropriate for any study that seeks to discover using interpretations. It provides a systematic element to data analysis. It allows the researcher to associate an analysis of the frequency of a theme with one of the whole content, it help the researcher to understand the research issue more widely (Alhojailan, 2012).

According to Denzin & Lincoln (2000), qualitative studies are interpretive and naturalistic in their approach: "This means that qualitative researchers study things in their natural settings, attempting to make sense of, or to interpret, phenomena in terms of the meanings people bring to them" (p.1-32). The current study employed within cases and across cases analysis based on TA method. As described by Gall *et al.* (1996), a case study is "the in-depth study of instances of a phenomenon in its natural context and from the perspective of the participants involved in the phenomenon" (p.545). Yin (2003) argues that a case study research design applies when answering questions like "how" and "why"; subjects cannot be manipulated behaviourally; covering relevant contextual conditions to the research phenomenon; or when phenomenon and context cannot be clearly distinguished. While a case study focuses on a single and unique case, multiple cases examine various cases to determine the similarities as well as differences across the cases.

The current study explored eight case studies with focus on information sharing barriers of SCM at the horizontal level of coordination between humanitarian organizations in Jordan. The case study approach was deemed suitable since the researcher was able to explore information sharing barriers social processes in the context of organizational environment in order to gain understanding on how information sharing is hindered across the supply chain partners at inter-agency level due to interplay of various factors identified from the interviews. On the other hand, cross-case analysis was used to describe details of IS barriers based on constructs in order to order the data as well as relate the findings to published literature.

As noted by Yin (1984), multiple cases aim to make the findings more robust through replication of emerging patterns. In summary the current study adopted the process described by Leedy & Ormrod (2001) who build on what was proposed by Creswell (1998) & Stake (1994) as follows: arranging organizational details from each case logically based on identified themes and subthemes; then categorizing the data into meaningful codes or groups; interpretation of each code to identify their meanings and how they are related with their cases; examine the data as well as their interpretations in order to identify underlying patterns or themes that describe each case more elaborately; and finally provide an overall description, draw conclusion and implications of the findings beyond each case study (Leedy & Ormrod, 2001) .

The current study identified the main themes based on type of barrier: technical, organizational, financial, and managerial. This was followed with data analysis based on each theme and the research question, objectives and existing literature for each case and cross-case analysis respectively. Yin (2003) stated that "the best preparation for conducting case study analysis is to have a general analytic strategy" (p.115). Yin (2003) recommends developing "a descriptive framework for organizing the case study" (p.1140) as the most common approach to exploratory research. In the current study, the researcher reduced the data by determining case chronology, data coding based on phases and themes in view of the integrated contextual factors as well as features, data analysis of each case study, comparing each case with interview transcripts and their theoretical application. For each interview, the researcher marked the text based on specific phase and theme as well as categorizing the paragraphs around the same theme or phase. Similar procedure was taken to organize the documents.

In order to structure the cases, the researcher scanned the interview content for each theme, developed facts, incorporated illustrative and representative information sharing barriers related to each theme and finally made notes based on phases and themes. Although the researcher was not allowed to compliment data collection with observation method, the semi-structured interviews and secondary data were used to validate data collection. This comprehensive procedure was essential to understand each case separately as described by Eisenhardt (1989) that it *"allows the unique patterns of each case to emerge before the investigators push to generalize patterns across cases. In addition, it gives investigators a rich familiarity with each case, which in turn, accelerates cross-case comparison"* (p.540). On the other hand, the author states that "within cross-cases analysis, the research follows three tactics. –

First, to select key themes suggested by the existing literature (the researcher looks for within-group similarities coupled with intergroup differences); second, to look for the subtle similarities and differences between cases (this can lead to more sophisticated understanding); third, to divide the data by data sources (this exploits the unique insights possible from different types of data collection)" (p.541).As a result, this research used within case plus within cross-cases analyses to identify novel findings within the collected data (Eisenhardt, 1989). So as to fully generate as well as display the evidence together with procedures based on the findings in each case and replicates across the cases. Therfore, the researcher organized cases based on themes, categories and codes in relation to types of information sharing barrier

With regard to multiple cases, Creswell (1998) suggested that "a typical format is to first provide a detailed description of each case and themes within the case, called a within-case analysis" (p.63). Notably, thematic cross-case analysis is done following within-case analysis (Creswell, 1998; Yin, 2003) as was the case for the current study. Cross-case comparison analysis involved use categories from each case, codes and themes to determine the similarities and differences across the cases. The aim was to expand the scope of the initial data analysis using structural as well as different lenses on the especially through the use of structural and diverse lenses so as to improve theoretical accuracy and reliability in relation to the collection analysed data (Eisenhardt, 1989). Therefore, the researcher based on themes, concepts, and as well as relationships that emerged from case studies and multiple case comparative analyses. This was followed with comparing emergent findings with informational sharing theory and other relevant perspectives using analytical generalization method. As described by Yin (1989), a previous theory is compared with empirical results from case studies based on similarities and differences in emergent concepts, theory/hypotheses and extant literature using questions such as what similarities or differences exist and why so? .

Notably, a successful analysis should base on involves broad theoretical range (Eisenhardt, 1989). Overall, linking emergent theory with existent literature increases internal validity as well as generalizability, and theoretical building level based on case research. Eisenhardt (1989) emphasize the importance of examining differences in emergent literature to avoid or reduce negligence of varied findings and that "conflicting results forces researchers into a more creative, frame-breaking mode of thinking than they might otherwise be able to achieve" (p. 544). In similar vein, Eisenhardt (1989) argues that similar findings related to literature is critical for tying underlying phenomenal similarities that are often related to each other together. Therefore, this leads to stronger internal theoretical validity, wider generalisability as well as greater conceptual level.

4.7.1 Research Validity and Reliability

One of the criticisms that surround qualitative research is that interpretation of data might contain personal biases on the side of the researcher. The other criticism is the fact that the result of the research might not be generalized to the other settings (Yin, 2009). For the purpose of combating such limitations, Yin (2013) puts his argument that qualitative researcher need to establish trustworthiness in the process of convincing the readers that the findings within a given study are of great significance (Creswell, 2013). Therefore, Valid and reliable results are essential for high quality inferences or conclusion (Eisenhardt, 1989; Yin, 1994). Different quality tests are applied in qualitative empirical research such as factor validity and internal validity as well as external validity plus reliability (Yin, 1994) as discussed below.

4.7.1.1 Factor validity

This was achieved by the researcher through her experience as a supply officer in the Royal Medical Services, Jordan and the experience in humanitarian sector and building trust with research subjects during the interview sessions to eliminate informants' bias; rich evidence from data triangulation during data collection based on interview sessions and secondary materials such archival records; evidence from collected data as cited in the expert interviews database as well as case interviews. Besides that, the researcher used actual time, interview location, and by adhering to research procedures during data collection by linking the protocols with research objectives and themes. In this regard, the researcher was able to link cases' conclusions with the actual facts as documented in the cases.

4.7.1.2 Internal validity

Collis & Hussey (2003) define validity as "Validity is the extent to which the research findings accurately represent what is really happening in the situation" (p. 58). According to Creswell 2009), qualitative validity is the determination of the researcher for the accuracy of the findings. In this research, linking themes suggests the possibility of theoretical link between information sharing barriers across the humanitarian supply chain partners to ensure valid and reliable conclusion. In addition, the research participants expressed themselves freely in view of the research implication in humanitarian sector. There was clear evidence during thematic data analysis based on themes and categories supported by their corresponding codes. The use of case and cross-case analysis allowed comparison of similarities and differences in each case and among the cases in order to validate the relationships of information sharing barrier and their effects across the supply chain. Lastly, theoretical expansion are used to explain the observed relationships between the barriers of information sharing across the supply chain as recommended by Eisenhardt

(1989) that *"it is important to discover the underlying theoretical reasons for why the association exists to establish the internal validity of the findings"* (p. 542).

4.7.1.3 External validity (Generalisability)

External validity refers to the extent to which the research results can be replicated beyond proximate research case studies (Miles & Huberman, 1994; Yin, 1989). Quantitative research applies statistical generalization as opposed to qualitative research which applies analytical generalization (Yin, 1994; Eisenhardt, 1989) since findings are generalized into theory and this obtained by using a multiple case studies methodology comparison of evidence. In this research, each case was analyzed elaborately followed by cross-case analysis in order to draw valid and reliable conclusion based on the findings. Given that the study is qualitative, analytical generalization was sought as opposed to statistical generalization. The selected cases based on their active engagement and significant contribution in the humanitarian sector in Jordan and their scope of operation as local or international or united nations organizations so as to strengthen the generalization of the research findings to other actors in the sector at national level or even provide insight on other countries that share business environment with Jordan.

4.7.1.4 Reliability

Reliability refers to the extent to which a given study is consistent and stable even the same techniques are applied in a repeated number of ways. The main role of reliability in a research is to minimize biases and errors that might be encountered in the study (Leedy & Ormrod, 2005). This study applied same procedure as well as questions to each case as a requirement to ensure reliable and similar findings with minimal errors and biases by adhering to research protocols. To increase the richness of the data, case databases (e.g. documents, computer files, and interview related narratives) were used during data collection. The researcher also maintained same key themes as well as sub-themes to ensure reliable replications in the key findings. More specifically, the reliability of this research was assured through several activities. First, the interview questions were properly designed by the researcher (the key tool for data collection in the research). Second, the study used various sources of data collection tools, documents, booklets files, websites and papers. Also, pre-test was first done for the questions to maximize their relevancy, preciseness and clarity in answering the required research questions (Saunders *et al.*, 2009; Bryman & Bell, 2007). All ambiguous questions not showing clear objectives were replaced as appropriate.

Nevertheless, research experts, including the supervision of the researcher, were frequently consulted at each stage of the study for corrections and criticism on the tools for data collection. All these points are discussed in the section of data collection. Third, the researcher used the same key themes to check on the capability of reliable replications for the key findings. And finally, the researcher sent a report to experts in the humanitarian organizations to review the findings if they agree with the results or not. These aimed at ensuring that the results from the research truly represent the information sharing barriers at horizontal coordination in supply chain management between humanitarian organizations and those results of similar findings can be obtained even if the study is carried out by another researcher or at different times so long as all other factors are kept constant.

4.8 Conclusion

This research involved comparison of different research philosophical perspectives as well as approaches and different strategies and methods before providing a justification for using interpretivism, induction, deduction and qualitative design methods and strategy, research design, data collection, ethical issues, time horizon, triangulation, pilot case study, data analysis, validity and reliability and finally conclusion.

CHAPTER 5: RESULTS AND FINDINGS FROM PILOT STUDY

This chapter provides an overview of the findings from the respondents in the pilot study. The aim was to test the procedures and validity of research tools in order to make necessary adjustments where deemed fit before the implementation of the main study. The procedures and findings from the pilot study are described in the following sections.

5.1 Implementation of the pilot study.

The pilot case study was conducted in June 2015-four months before the actual data collection. To achieve this, the pilot study assessed eight experts from UN, and international and local NGOs in Jordan. The experts were sampled from different management level (Program directors, project managers, programme manager, coordinator officers, logistics manager and field officer) in different humanitarian organizations included.

The interview sessions were guided by the case study protocol to collect relevant data from the experts based on the research questions:

1. To explore:-

a) Supply Chain Management issues (concept, benefits) in humanitarian organizations in Jordan.

b) Coordination Activity in Supply Chain Management in humanitarian organizations in Jordan.

c) Information sharing mechanism of SCM between humanitarian organizations in Jordan.

2. To identify the information sharing barriers between humanitarian organisations in Jordan.

3. To identify the actions taken to bridge the barriers of IS in order to improve the coordination between humanitarian organizations in Jordan.

Data collected from semi–structured interviews and archival data were all arranged for analysis based on the perspective of the participants. Samples were first searched and reached, then called for a briefing session about the purpose of the research followed with consent for participation prior to data collection at agreed interview time (Perry, 1998). The researcher shared the protocol questions before the interview sessions with the relevant interviewees so as to prepare and provide the necessary information. Research importance and background information were also explained to the respondents. Face-to-face interviews were then undertaken as guided by the case study protocol. The discussion of the findings on the themes and codes were generated and discussed with a conclusion at the end of this chapter. However, the results generated from the pilot study were not included in the final set of data since the aim for this study was to ensure that the relevant respondents understand the research phenomena with the protocol questions as described by Yin (2007).

The researcher ensured that all the selected participants were available for the interviews by reminding the participants through emails. The researcher met with the participants prior to the field day during which the expert interviewees were assured of their confidentiality during or after the study with regard to the data collection and the research process. Moreover, all the participants committed their ample time in answering the questions in details and comprehensively. This allowed the researcher to obtain relevant data to each research question in the allocated time. Overall, the researcher was so impressed with the participants' maturity and cooperation in sharing their work experience and time management, which contributed to a successful interview process.

5.2 Overview and generic information for humanitarian organizations

As a result of Syrian conflict in 2011, many humanitarian organizations have been working throughout Jordan to provide humanitarian assistance to the Syrian refugees to protect their lives, and dignity. Although the main humanitarian focus is the Syrian refugee crisis, they also support other refugees in Jordan, and implement early recovery and developmental programs as well.

Considering the important role played by the humanitarian agencies, this research was conducted in order to investigate the challenges facing IS in HSCM. Therefore, the researcher conducted a pilot study by interviewing individual experts using semi-structured interviews with a view to understand the main issues of IS and horizontal coordination in HSCM. The interviewees were selected from senior management staff and technical officers since they were involved in enhancing coordination and IS of SCM for a better humanitarian response. Among the key themes identified by the pilot study included managerial, organizational, technical, financial, Socio-cultural barriers, language, quality and opportunism barriers.

5.3 Respondents information

This pilot study interviewed eight mangers of expert staff from different UN-NGOs, international and local NGOs in total. The findings were analysed and discussed based on thematic method after determining initial codes as well as categories for each identified theme from the interviews.

5.3.1 Demographics characteristics

Demographic characteristics showed that all the study participants were university graduates (i.e. doctorate degrees (2), master's degrees (3) and bachelor degrees (3). Their corresponding work experiences and other details are summarised in table (5-1) and as confirmed below:

"...I work as a director of programs in my organization in Jordan...I finish my PhD in psychology ...and I have a medical degree as well... I worked in this field since 21 years..." program manager (1)

Table (5-1): General Characteristic of the interviewee

Interviewee Positions	**Interviewee Characteristic**				
	Experience (Years) / humanitarian field experiences (years)	**Organization Location**	**Organization Established (Year)**	**Service Type**	**No. of Employees**
Program manager (1) with Doctorate degree	22 years /20 (years) and 7 months	Amman	1946	Wash and Sanitation, education services	In Jordan around 400 staff
Program manager (2) with Doctorate degree	18 years /(18years)	Amman	2007	Health care service	300 staff
Project manager (3) with Master's degree	12 years / (12 years)	Irbid	2004	Wash and Sanitation service,	120 staff
Logistics manager (4) with Master's degree	16 years/ (12 years)	Amman	2007	Health care service	320 staff
Logistics manager (5) with Barchelor degree	14 years/ (10 years)	Amman	2000	Health care service	200 staff
Coordinator officer (6) with Barchelor degree	19 years / (11 years)	Amman	1950	Shelter, protection services and funding	In Jordan slightly more 500 staff
Coordinator officer (7) with Master's degree	16 years / (10 years)	Amman	2003	Food, wash services	About 350
Field officer (8) with Barchelor degree	14 years / (12 years)	Amman	1985	Non –food items, education, protection and wash services	About 300 staff.

5.3.2 Organization profile

In terms of number of staff, the study found that six out of eight organizations had between 300-500 hundred employees. Only 2 had far less than 300 employees. This is confirmed as stated below:

> *"Acted Jordan…. we must be between 300 and 400 staff …* " project manager (3)
>
> *"…I am not quite sure about the exact figure but I think it exceeds 500…"* program manager (2)

Moreover, the study found that the organizations assessed provided a range of services to their target population, including healthcare, water and sanitation, and capacity building as confirmed by the following responses:

> *"...different programs one of them is the primary health care the other one is the mental health psycho social program and protection …we also provide capacity building programs including them staff health capacity building in minster of education…"* program manager (1)
>
> *"…JHAS…provide primary health care to vulnerable population in Jordan …"* logistic manager (5)

Furthermore, it was found that the number of beneficiaries served annually was different, and was influenced by the capacity and funding of the organizations as confirmed below:

> *"…11 thousand student's only and approximately in total 220000 refugees so we did water improvement also we provide water tanks we repudiated… we have done households Repudiation for water sanitation so the same we target it 550 households last year in Mafraq and Zarqa"* Project manager (3)

5.4 Data Collection and Findings

5.4.1 HSCM issues

All the eight experts interviewed emphasized on the need to observe humanitarian principles of humanity, impartiality, neutrality and independence. Program manager and Director of programs of UN-organization indicated that humanity means to bring assistance to the affected people without discrimination. Impartiality implied that the assistance is guided solely the needs, and provision is based on prioritizing the most urgent cases. Neutrality means not taking sides in hostilities or engaging in political, racial or religious controversies whereas independence is to maintain their autonomy in humanitarian assistance. The following statement confirms views of the participants about the principles for the humanitarian organizations.

> *"As a general principle and standards in humanitarian organizations in time of crisis, humanity, impartiality, neutrality and independence are the basic of our humanitarian assistance. humanitarian needs must go to the vulnerable people based on their case priority in order to save lives and alleviate human suffering".* Program manager (1).

The main objective of the humanitarian organizations is to provide humanitarian aid operations to vulnerable people while preventing loss of life, property and material damage through immediate response to the crisis. This study found that the SCM play a crucial role to the effectiveness and speed of response for major humanitarian programmers. Logistics manager (4) explained that:

> *"At the time of humanitarian crisis, the important job for humanitarian logisticians is to provide the right material at the right time at the right place for the right cost, and this is required from the humanitarian staff to understand the importance of humanitarian*

logistics and their activities such as preparing, demand assessment, planning, procurement, transport, warehousing…." Logistics manager (5)

The findings showed that the study participants were aware about issues of the SC right from need identification to communication for response action to be taken. However, the participants indicated facing challenges such as poor need assessment which eventually impact negatively on procurements and humanitarian supplies or funding process. This highlights the need for effective SCM of HL of aid operations in order to meet the refugees' demand timely and satisfactorily. Moreover, the humanitarian logisticians and staff need clear understanding on HSCM and logistics.

When asked to explain the concept of SCM in their organization, all the interviewees suggested some processes were undertaken by organizations in order to deliver their services to the beneficiaries as confirmed by the following responses:

> *"…the program people propose to receive certain supplies once the budget are approved the supply chain figure with finance colleagues they approach …. or let's say the apply of procuring and securing the supplies in to warehouses …the distribution of supplies between different clinics are proceed according to a weekly schedule so that each clinic is provided with its weekly medication supply at identified day of the week…"*programme manager (1)

Regarding the SC issues, the pilot study revealed that there was high demand of the services such as medication, psycho social support and the associated tools or activities, among others. The NGOs were compelled to raise the issue with the donor where the recommended medications was lacking in the market in order for the donor to advice on the next option. This is confirmed by the following response:

> *"…in our program we are supposed to prepare medication according to their list and sometimes that these kind of medication are not available and they are not really in the market so we need to claim it to the donors……"* logistic manager (5)

The results also showed that the NGOs sometimes lack safety stock or the supplies may take longer to be delivered than expected due to procurement procedures. This is confirmed as stated below:

> *"…we try to have some margent [safety stock] but in the same we can't… the supplies take longer to arrive to me when I need it where I need it but it also increases the transparency and it's this procedure that takes time are there to make sure there is no …not to save time but to make sure that there is no miss chose of the money…"* Coordination officer (7)

The NGOs also lack adequate capacity to meet the presenting needs independently other than through referral to their affiliates or partners. This is confirmed by the following response:

> *"…we provide within our clinics is primary health care and emergency but in case a patient needs advance medical care there is procedure that a patient has to go through or to in order to receive needed approvals and receive needed medical service within the designated hospital affiliated hospital to our NGOs…"* logistics manager (4).

All the experts interviewed believed that SCM is critical to disaster relief operations due to the effectiveness, efficiency and speed in supplying the affected people with their requirements such as health, food, shelter, water and sanitation. As for the HL , all activities which involved planning, sourcing , procurement, warehousing , last mile distribution are very crucial stages in humanitarian relief SC and humanitarian actors must take into considerations the benefits of SCM. Logistician (5) explained some gaps in the concepts of SCM:

> "*….unfortunately ,.due to the environment that the HSCM work in ,un stable demand , humanitarian actors influences particularly the donors, lack of staff training ,lack of understanding of supply chain management concepts and benefits …….humanitarian supply chain management needs a lot to enhance to avoid service duplication for different types of services."*

Logistics management is part of SCM and serves many roles: planning; implementing and controls the efficient, effective forward and reverse flow of information, goods and services from the point of origin to the point of victim's requirements as noted below.

> *"Really, for me so that activities such as planning of all logistics activities are useful both on refugees and our staff"* Coordination officer (6)

The interviewees stated various benefits of SCM such as improved service delivery, transparency and integrity, improved coordination, satisfaction of clients' needs, timely, efficient and cost-effective delivery of products, better prices and quality, to name but a few. This is confirmed by the following responses:

> *"…high level of transparency and dealing with our donors and with our suppliers also it has so far allowed us to maintain regular inventory … regular inventory is something really important and we maintain our warehouses intact by disposing expired or there is approaching expired date appropriately …"* programme manager (1)

From the above findings, the challenges facing the HSCM may be attributable to what was reported earlier in literature that is an emerging field within SCM (Kovács & Spens, 2007; Tatham *et al.*, 2009; Overstreet *et al*. 2011; Leiras *et al*., 2014). Thus, humanitarian organizations require more strategies that enable them to respond to risks and uncertainties including demand, supply, and processes more effectively.

5.4.2 Coordination and information sharing issues

Exploratory interviews demonstrated that coordination is an essential function and strategy of SCM, and the coordination philosophy with respect to HSCM is to all types of disasters effectively. This explained by coordination officer (7).

> "*Jordan have high number of refuges located in and outside camps …And specially in the current crises, you will see that huge number of NGO's are responding to this, it is impossible to work a lone to fulfil the refugees needs and sometimes there are a duplication of service .but it becomes honestly like a competition between the organizations at certain times and this is reflect on the coordination efforts between the humanitarian organizations. … ".*

This study found that all the interviewees used internal/ vertical coordination and external/ horizontal coordination to control organizational operations as confirmed by the following responses:

> *"Internally, each department there is a time line for each meeting that they are really coordinate together…externally we are part of bigger coordination structure the coordination structure which is head by the governments sometimes and also by the coordination structure that it's applied each emergency, Its small operation to be honest but sometimes we took strategic decisions for example we are sharing mental health psycho social group and share it with the WHO. But generally, there is a lack of coordination with other partners".* Coordination officer (6).

According to the experts interviewed, coordination between humanitarian organizations face many challenges such as limited funding, lack of skilful staff, competition and structure of the organizations. This is supported by the quote below

> *"Because of the high level of competition and lack of funding, sometimes and not all information sometimes given because of this competition thing so you would receive certain information …. Certain level of information at these meetings or probably not everything ... so we try to coordinate as far as we can but it's not like I wouldn't say it a perfect …… each manger has in term of coordination "*coordination officer (7).

The interviewees demonstrated that IS constitute the core tool of SCM to share information between their actors in order to promote organization performance and build a strong relationship between partners based on trust and commitment.

> *"Information sharing means what we are going to do, with whom to employ, what to plan ,design and procure, what are the security matters of information , what are the reporting requirements that must be available …. ….. So when it came to date we have certain data that we have certain activities if share such information achievements could be occur with other humanitarian organizations such as s trust, commitment and enhance our organization*" Logistic manager (5)

Regarding the IS issues, it was found that the NGOs practiced this culture internally at organization level and externally with other organizations as confirmed by the following responses:

> *"…we share general information and not much secret information and nothing be personal if it's a project but specific for specific matter then you don't share the information with other organizations "*Logistics manager (5)

However, this is influenced by various factors such as nature of information and programs, status of information systems and skills, among others as stated below:

> *"…clinical management system has not been established…only information system that we have once the refugee assistance information system that it is established by UNHCR the one that we use to import data on location directly to UNHCR we used to have our copies of ….. Like can manage the rights system within the clinics and headquarter and share data with UNHCR but it was not purely with partner …"* programme manager (1)

This study showed that having good information system impacts coordination in a positive way. However, this is yet to be achieved by some NGOs, and therefore coordination is still poor as confirmed below:

> *"…there is a gap or you can say a challenge and when the challenge comes that means that we don't have proper information sharing …"* field officer (8)
>
> *"information systems very important to work…if you have a good information system then you have a better quality reports in hands, and you can have reliable data to report on in sector coordination meeting and this reflect a good image and trust of your organization and enhance information sharing…"* logistic manager (5)

5.4.3 Barriers and challenges of information sharing

Although sharing information is essential for HSCM, this study found that various barriers and challenges are still experienced by the UN-organizations and NGOs. These include lack of right technology/tools, need for capacity/skills, delayed communication, limited information, irrational decision making, irrelevant information late recruitment and engagement of staff, limited funding and lack of capacity building. The results of poor coordination and overall HSCM performance as confirmed by the following quotes:

"we have a big challenge particularly in local NGOs it is the turnover of the staff, so this is a challenge and you need to make sure that your staff are trained for doing" Logistic manager (4)

"…the information takes long time to pass on. Let's say within my organization we have every month one meeting with all partner we all meet and we all discuss about what happen … but other partners not committed to these issues" Logistic manager (5)

5.5 Actions to enhance information sharing

Humanitarian organizations are increasingly working in sector groups such as health working group sector and protection working group sector as a strategy to improve IS between them as quoted below.

"In fact, recently the UNHCR developed a strategy as much as to improve information sharing between the humanitarian organization for a better refuges services, this system called working sectors group, so we have a sector for each service, for instance, health care working group sector ….". program manager (1)

Overall, the pilot study indicated that coordination among the SC partners is limited which eventually delay effective service delivery. The information system is either lacking, outdated or not well equipped to facilitate IS. On the other hand, the human resource workforce is either lacking, inadequate or lack relevant skills, especially in IT and project management skills due to high turnover or poor remuneration, which affect the quality of service, information processing and sharing as well. Therefore, IS among the partners is inefficient, and eventually affects timely and strategic decision making for humanitarian response.

5.6 Observations from the respondents

The key findings with interviewees suggested that the HL and SCM area needed more improvement to facilitate timely service delivery and increased performance. The study identified limited coordination among the SC partners which eventually delay effective service delivery. Besides, the information system is either lacking, outdated or not well equipped to facilitate timely IS across the SC. The situation is compounded by lack of adequate workforce or lack relevant skills, especially in IT and project management skills due to high turnover or poor remuneration. This results in inefficient IS among the SC members, delay in strategic decision making and thereby poor humanitarian response.

Different organizations use different names or definitions for modes of transport, supplies and staff composition, among others. Long & Wood (1995) stated that “Ironically, inter-organizational relations are usually a challenge to the relief effort instead of a source of support. Each organization has its own operating methods and goals, and it is only with great effort that they coordinate their plans and share resources” (p.216). This suggests that organizational or cultural language is likely to result in procedural difficulties (Long, 1997). Lack of effective coordination is common during disaster response and it is worse when partnering agencies have disputes between them or when reluctant to share information which lead to duplicated efforts plus wasted resources (Paho, 2000).

On the other hand, the issue of inadequate funding among humanitarian actors results in lack of documenting the best practices as well as tracking information on conditions of complex SC. Moreover, it hampers learning opportunities as well as institutional memory on successes and failures (Sowinski, 2003). Other barriers include poor or lack of relevant training that affects the quality of logistical operations. Moreover, the field managers are confronted with urgent demands during relief effort such as international media pressure, monitoring agency attention as well as donor restrictions on aid management.

Due to unpredictable occurrence of disasters, it is difficult for humanitarian agencies to retain relevant workforce, and even those who have received training are usually volunteers on short-term basis. Some organizations may experience up to 80% annual turnover of logistics personnel, which further complicates personnel issues (Thomas, 2003). Consequently, there is constant influx of staff members who are untrained and/or inexperienced in different fields, including organizational and relief logistics.

Table (5-2) shows the suggested key themes and the supported interviewee quotations for the findings of the pilot study. These themes were generated and refined in order to be used in the research multiple case studies to investigate the information sharing barriers at horizontal coordination in supply chain management.

Table (5-2): Key Themes Supported by Interviewee Quotations

Managerial barriers	lack of staff experience, lack of staff skills ,lack of trust
"we have a big challenge particularly in local NGOs it is the turnover of the staff, so this is a challenge and you need to make sure that your staff are trained for doing" *".... we share general information and not much secret information and nothing be personal if it's a project but specific for specific matter then you don't share the information with other organizations".*	

Organizational barriers	structure of the organization, lack of regular monitoring and maintenance (insufficient resources for sharing information) ,competiveness between organizations
"…the information takes long time to pass on. let's say within my organization we have every month one meeting with all partner we all meet and we all discuss about what happen … but other partners not committed to these issues" *"Yah, really the same as in the business organizations, centralized structure in many humanitarian organizations have a bad or a negative influence on coordination efforts because of their centralized decision making"* *"Because of the high level of competition and lack of funding, sometimes and not all information sometimes given because of this competition thing so you would receive certain information …. Certain level of information at these meetings or probably not everything … so we try to coordinate as far as we can but it's not like I wouldn't say it a perfect …… each manger has in term of coordination".*	
Technical barriers	technology
"…the information systems that we have here are in place but that doesn't mean that we always everything this work perfectly… there is a challenge in having the internet…"	

"Sure, there is problem with technology and development technology particularly with people who are working in the field they are taking less time into technology". *"…program people propose to receive supplies once the budget are approved the supply chain figure with finance department then logistic department to procurement them logistics again its really very long approach …. or for example the apple of tenderization system ".*	
Financial barriers	Limitations of resources
"Currently, limited funding is the main challenge facing several humanitarian organizations and honestly this is affected on the duration period for many projects". *"…very hard job to train the non-experienced staff in humanitarian relief and too much money costs because of the shortage in budget".*	
Socio-cultural barriers *"Well, one of the problems that face the humanitarian response , demand assessment and supply process regarding the culturural and social back ground of the refugees in addition to NGOs themeselves , and it's a common problem in humanitarian response due to the information sharing problem , lack of experience and knowledge for some people who working in humanitarian organizations".*	
Quality barriers "*Yea, we have some delays sometimes, which affect the implementation of the program. Yea, of course we have delays. We have the human factor, sometimes you are overwhelmed, they don't have, you know…".*	

Language barrier *"It's not standardized how you share information, we don't use same language (terminology) to describe certain things, databases I mentioned to you it is very difficult ".*
Opportunism/Exploitation *"…… in other NGO's that is well established in Jordan before and it's well recognized till now they are working with the people they know that the local NGO's are the key in the communities so they work with us on the mobilization of community starting the program this is part of our challenges…".*

All the interviewed experts emphasized on humanitarian principles in their organizations, and the importance of SCM as well as its tasks for an effective humanitarian response. Moreover, they focused on the importance of IS and coordination between all humanitarian organizations which clarified that IS forms the basic element of successful coordination in SCM. However, IS and coordination between humanitarian organizations in Jordan are still in early stages.

5.7 Discussion of the findings

Based on the pilot study conducted, the findings showed that all the experts were university graduates and in charge of at one or more programs at their organizations. Moreover, the experts had different qualifications and experienced in the humanitarian sector. Regarding the number of staff at their organizations, the study found that three quarter of the NGOs had between 150-500 hundred employees while only one third had far more than 500 employees. All the organizations were engaged in providing various services to vulnerable refugees such as healthcare, water and sanitation, among others.

This pilot study found that all the NGOs and UN-organizations assessed observed the concept of SCM in their operations in order to deliver their services to the vulnerable refugees. This is in agreement with Lambert &Cooper (2000) that SCM involves integrating key processes from suppliers who ensure value addition through provision of products, services together with information to customers and stakeholders in the SC relationships. There is evidence that SC should be aimed at increasing commitment, IS as well as profits among the members for sustainable relationships (Tan 2002).

The humanitarian organizations use different coordination approaches where operations are controlled internally with minimal operations externally. Coordination mechanisms of the SC are distinguished by and dependent on various characteristics, namely structure of resource sharing, decision style, control level and sharing risk/reward. Therefore, the coordination mechanism chosen mainly relies on the individual organization and its functional setting in view of the cost of coordination and risk required to for minimal maintenance level (Xu & Beamon, 2006). Due to numerous SC activities, coordination system is essential in bringing different entities in order to facilitate the SC coordination. According to Fugate *et al.* (2006), coordination forms the main and most critical component of the SC.

Coordination of humanitarian relief SC may involve staff recruitment, paying workers, managing organizational resources, particularly volunteers, staff and information as well as communication, funds and accounts together with collaborations with governmental and non-governmental partners (Akhtar *et al.*, 2012). Nonetheless, coordination is not driven by financial motivation

(Tomasini &Van Wassehove, 2009a). Vertical and horizontal coordination should be reinforced by governments as well as armed forces and businesses, and between humanitarian agencies respectively (Van Wassenhove, 2006). Logistics and transportation are important to humanitarian organizations, which is why there is need to improve their systems so as to achieve catalytic and improved services at reduced costs of operations (Dolinskaya *et al*., 2011). Nonetheless, humanitarian agencies have less developed SC compared to that of commercial agencies or the private sector (Van Wassenhove, 2006).

The SC entails various complicated activities that may cause challenges in chain-related coordination practices (Arshinder *et al*., 2008). This suggests that all the SC members need to coordinate together such that each group is informed of the planned activities between the SC and the practices of other members in order to address any shortcoming. The situation is complicated by many barriers associated with collaboration between the humanitarian organizations since each organization has independent structure, IT system as well as management style and procedural rules (Schulz & Blecken, 2010). Moreover, the NGOs have incomplete or unreliable SC information, and the aid operations are mostly unstructured leading to deficient coordination practices (Russell, 2005).

The participants indicated the SCM improved service delivery, transparency and integrity, to name but a few. SCM promotes efficient supply as well as costs and thereby firm's profitability (Juttnerv *et al.*, 2007). Logistics plays a significant role within the HL since it combines and unites humanitarian organizations plus commercial agencies while ensure delivery of humanitarian relief supplies to the affected and needy communities (Fritz Institute, 2012). However, shortage or lack of inter-organizational collaboration complicates the task of humanitarian relief with increasing disasters, indicating the need for cooperation and task specialization across all stakeholders, including governments, humanitarian organizations as well as businesses (Schulz & Blecken, 2010).

This pilot study showed that having good information system impacts coordination in a positive way as previously reported that IS concept ensures increased competitive abilities and IS among partners (Powers & Reagan, 2007). For instance, the study showed that a good information system supports and improves coordination as well as making informed decisions. This is in agreement with Huang *et al*. (2003) that it helps its members to take strategic decisions towards better performance. Moreover, the NGOs practiced this culture internally at organization level, and to limited degree externally with other organizations. However, this was influenced by various factors such as nature of information and programs, status of information systems and skills, among others.

Having strong relationships with network members allow firms to share information willingly and make it visible across the network (Hadaya & Cassivi, 2007). The firms also ensure that there is integrated information, products as well as process flow across external and internal businesses as well as set frameworks so as to allow stakeholders to coordinate their business more efficiently (Fung *et al.*, 2007). However, this is yet to be achieved by some NGOs, and therefore IS is still poor. IS enhances competitive abilities among the SC partners through their relationship, and also allows them to gain information from each other (Powers & Reagan, 2007). It is evident that strong relationships facilitate firms to share information willingly and avail it to all parties within the chain (Hadaya & Cassivi, 2007; James & James, 1990). A well-established SC should provide a powerful environment in which information exchange regarding chains and markets take place (Williams & Moore, 2007; Lau & Lee, 2000). Moreover, a trustworthy relationship result in open communication among the chain partners, and thereby increases IS as well their ability to confront risks (Andersen, 2006).

IS allows smooth information flow to establish better SC relationships (Stefansson, 2002), so as to facilitate support strategic decision-making. SC partners share production plus marketing activities in order to remain competitive (Lau & Lee, 2000). Moreover, parties may share tactical information, including purchasing, operations or logistics as well as strategic information such as marketing and customer information (Hsu *et al.*, 2008). Most research studies concluded that organizations must make effective use of the shared information in order to remain chain partners, improve on their level of trust together with quality within the chain for better performance (Hsu *et al.*, 2008; Kwon & Suh, 2004; Lee & Whang, 2000). There is need for SC integration through improved communication among suppliers, producers plus customers in order to establish easier information sharing.

Developed networks among the partner's demand sharing timely information on logistics, sales and performance (Lee & Whang, 2000). IS may be achieved through interactions and communications, and promote stronger relationships (Ambrose *et al.*, 2008). The interactions are implemented via social events, newsletters as well as mail and telemarketing to ensure increased information sharing (Wong *et al.*, 2007). Other methods include face-to-face meetings and telephone to internet, exchange of electronic data and faxes (Ambrose *et al.*, 2008); socialization, which enhance inter-personal relationships through facilitating the information exchange process across the exchange relationships (Cousins *et al.*, 2006). Last but not least, IS methods may also include different means such as personal contact together with contract-farming through which relevant information exchange occur. Collectively, these sharing methods allow communication as well as improve relationships among the chain parties.

IS facilitates strategic decision-making about production, marketing planning as well as better network coordination to ensure improved performances (Huang *et al.*, 2003). However, the information shared should portray some characteristics, sources plus value on the relevant timeliness and uniqueness of information in order to achieve successful planning as well as superior service within the supply chain. Some scholars believe that IS may result in a decline of cooperation and profits; playing non-cooperative game as well as haggling result in information sharing failure; the high cost associated with sharing methods or technological systems result in delayed implementation of the timely information exchange approach; and the risk of not maximizing the benefits accruing from information sharing (Lee & Whang, 2000). Humanitarian organizations are in need of advanced technological skills in order to facilitate smooth internal and external IS and coordination (Lijo & Anbanandam, 2012). According to Russell (2005), HSCM frequently have incomplete and unreliable information on transportation. Moreover, the last mile transportation during disaster may be challenging (Balcik *et al*., 2010).

Due to unpredictable nature of disasters in terms of timing, location as well as the magnitude of disasters and their sudden occurrence, managing humanitarian organizations SC is very challenging (Balcik & Beamon, 2008). Similarly, the regional infrastructure is unpredicted and therefore managing supplies is bound to be extremely challenging (Balcik *et al.,* 2010). Besides, humanitarian organizations lack technical knowledge (Pettit & Beresford, 2009) and have SC without relevant information management systems (Tomasini & Van Wasenhove, 2009b). This leads to missing information. Failure to deliver solutions to existing humanitarian problems is attributed to substantial lack of technical knowledge amongst humanitarian agencies as well as corporations with eventual negative consequences (Pettit & Beresford, 2009).

Most humanitarian organizations are required to comply with rules, laws as well as regulation of countries they operate or send aid. However, some governments may decline to receive the aid or deny entrance to the humanitarian workforce in their countries and deliver the aid items and services (Balcik *et al*., 2010). Humanitarian organizations are donor-driven and financed (Tomasini & Van Wasenhove, 2009b) since they are mainly run by donations and cash from voluntary contributions, governments as well as non-governmental organizations (Gray & Oloruntoba, 2006), which may be unpredictable and inadequate (Pettit & Beresford, 2009).

Some issues may affect HSC coordination practices, and include various diversity actors, expectations from donors and funding structure, among others (Balcik *et al*., 2010). Coordination barriers within the humanitarian relief chains arise from shared vision and mission among various humanitarian organizations of helping others but eventually clash culturally, geographically as well as linguistically and politically (Balcik *et al*., 2010). The agencies may also fail to meet donors' expectations as per the contractual obligations, yet securing funding from private donors is challenging (Balcik *et al.*, 2010) due to stiff competition (Tomasini & Wasenhove, 2009b). Even where the agencies have received the donations, they are required to work with restrictions regarding the types of activities that must be budgeted for (Balcik *et al*., 2010) largely due to limited resources for financing humanitarian coordination activities (Tomasini & Wasenhove, 2009b).

Regional infrastructure is unpredicted in advance, posing a challenge to management or and determination of the required supplies before disaster occurrence (Balcik *et al*., 2010). Demand unpredictability in humanitarian organizations is critical with respect to timing, location type as well as size (Balcik & Beamon, 2008). Furthermore, the aid agencies may only exist temporarily since new humanitarian effort, supply chain practices plus other endeavors are required in every disaster occurrence (Gray & Oloruntoba, 2006), particularly with the unpredictable nature of disasters occurrence.

Resource supplies together with demand present another issue because of the unpredicted intensity, disaster timing and lack of financial to humanitarian and technological resources. Conversely, there may be a surplus of goods in which case there is availability of substantive supplies than required, suggesting that they will be kept in the airports/warehouses, posing storage difficulties and increase unnecessary cost (Balcik *et al.*, 2010). Another issue suggested by Overstreet *et al*. (2011) that was also identified in this study is lack of humanitarian professional such as logisticians to effectively plan, evaluate as well as coordinate relief operations within the humanitarian supply chain (Overstreet *et al.*, 2011). This pilot study also highlighted the issue of opportunism where international NGOs would use the staff of local NGOs without mutual gains as previous reported (Grover &Malhotra, 2003). This practice elevates transaction costs in the business relationships due to monitoring measures, asset protection and guarding the parties against selfish behaviors (Grover & Malhotra, 2003).

5.8 Recommendations

This pilot study recommends future research mechanisms that can ensure effective and improved HSCM similar to commercial sector in order to meet the needs of the vulnerable population better. This could include more investment of IS towards improved technology and overall information system so as to ensure timely, quality and adequate information, capacity building the staff to on maximizing the use of the available resources so as to ensure smooth IS and regular monitoring and evaluation for progressive processes improvement.

5.9 Conclusion

IS within the SCM facilitates service delivery to the vulnerable population. However, a successful HSC requires good IS so as to facilitate effective coordination among the chain parties. This pilot study found that IS among SC members may be done through meetings, emails, common portal, to name but a few. However, the humanitarian sector appears to have a less developed SC characterized with various issues such as lack of right technology/tools, need for capacity/skills, and delayed communication, to name but a few. Therefore, there is urgent need to address the current challenges and barriers to IS in HSCM in order to facilitate effective coordination of service delivery and overall relief process management. The following chapter provides details of the main research study findings which was built on the findings from the pilot study.

CHAPTER 6: FINDINGS FROM MULTIPLE -CASE STUDIES

6.1 Introduction

To ascertain the findings from the pilot study as well as increase the validity, the researcher performed the main data collection from eight humanitarian organizations in Jordan. These comprised of the UN-NGOs, the international and national humanitarian organizations in Jordan which are engaged in providing relief supplies to the Syrian refugees, including food, shelter and education or health, water and sanitation. Sampling was done by performing a search from different websites, forums, the ministry of planning and international cooperation based on the research topic. This was followed by selecting the seniors managers and directors who are involved in the process of coordination and information sharing of SCM in their organizations . All the subjects participated to completion, making a response rate of hundred percent.

6.2 General Information on Cases

This chapter presents the findings obtained from a total of 8 case studies as indicated in table (6-1) and based on the main themes and categories derived from the pilot study.

Thematic analysis of the transcripts generated eight main themes (Appendix 8): managerial, organizational, financial, technical, language, opportunistic, quality, socio-cultural and religious barriers. Cases 1 and 2 comprise of findings from the UN Organizations; Cases 3-5 are findings from International Organizations; and Cases 6-8 are findings from Local Organizations. The chapter will conclude by providing a summary on main findings from all the Case studies based on key themes.

Table (6-1): Overview of the UN organizations, International NGOs and Local NGOs in Jordan.

Case #	Establishment Year Globally	Experience in Years for humanitarian services	Service Type	Number of employees	Number of beneficiaries served/Year	Organization location
UN-Organizations						
1. Coordination officer, Field officer, Logistic manager & Program manager	1951 (1991 in Jordan)	8- 22 years	Protection, shelter, refugees' coordination with other government agencies, NGOs that provide the different services.	More than 750 in all offices in Jordan	Around 400,000 - 600,000 refugees.	Head quarter in Amman and other offices in different Jordanian Governorate.
2. Coordination officer, Director manager, Field manager, Logistics manager, Program/project manager	1946 (1952 in Jordan)	10- 29 years	Education, Water and Sanitation	More than 600 in all offices in Jordan	less than 3 00,000 refugees.	Head quarter in Amman and other offices in different Jordanian Governorate.
International (NGOs) Organizations						
3. Coordination officer, Field officer, Logistic manager, Program/project manager	1984 (2007 in Jordan)	4-19 years	Primarily health care, mental health.	350 in all clinic and offices in Jordan	about 280,000 refugees.	Head quarter in Amman and another clinic in different Jordanian Governorate
4. Coordination officer, Field officer, Logistics manager Program/project manager	1993 (2003 in Jordan)	6-16 years	Nutrition, water and sanitation	about 300 in Amman and other offices in Jordan	about 400,000 refugees and Jordanian Vulnerable people.	Head quarter in Amman and other offices in different Jordanian Governorate
5.Coordination officer,Field /officer	1989	3-15 years	health care, cash assistance, water and	about 320 in Amman and other	about 200,000 refugee and Jordanian	Head quarter in Amman and other offices in

Logistics manager Program/project manager			sanitation, shelter	offices in Jordan	Vulnerable people	different Jordanian Governorate
National/Local (NGOs) Organizations						
6. Coordination officer, Field officer, Logistics manager, Program/project manager	2005	9-16 years	Health care services and nutrition	300 in all clinic and offices in Jordan	Around 100,000 refugee	Head quarter in Amman and other offices in different Jordanian Governorate
7.Coordination officer,Field officer, Logistics manager. Program/Project manager	1988	5-18 years	Mainly water and sanitation, shelter	200 in all office in Jordan	A bout 120,000 refugee	Head quarter in Amman and other offices in different Jordanian Governorate
8. Coordination officer Field officer Logistics manager Program/project manager	1977	10-21 years	Food items, water and sanitation and shelter	160 in all office in Jordan	A bout 150,000 refugee	Head quarter in Amman and other offices in different Jordanian Governorate

The key unit of analysis in this research is the humanitarian organizations being assessed for information sharing barriers and their actions to enhance information sharing and horizontal coordination of SCM. This research used qualitative research design with individual semi-structured interviews to collect data from the research participants. Data analysis was done using thematic analysis (TA) method (Braun & Clarke, 2006) after determining initial abstract codes as well as categories for each identified theme from the interviews. By definition, (TA) refers to qualitative research method of identifying, analyzing as well as reporting patterns/themes in collected data. The aim is to minimally organize as well as obtain detailed descriptive data set. Moreover, the method is used to interpret various aspects related to the research topic, eight cases were analyzed, based on the perspectives of the interviewees, 4-5 interviews in each case (each interview with an average long of 45 minutes - one hour). The participants in each case were logistic manager, coordination officer, program manager, project manager, and field officer. Data from archival records, websites, booklet and other sources were used to support the interview data table of analysis for the eight cases are presented in Appendix (8).

6.3 UN-Organizations

Eight interviews were conducted in two UN-organization to allow comparison of respondents views and understand about the study subject (Wengraf, 2001). The case studies findings with the main themes are elaborated in the following sections.

6.3.1 Case Study One

Supply chain management

In this case, the interviewees clarified the response to refugees' crisis in Jordan under the Jordanian government leadership and the UNHCR coordination (see chapter 3 fig (3-4) page 78). To ensure effectiveness, all the key stakeholders are involved to ensure that the needs of the refugees in Jordan are addressed.

All interviewees emphasized that the main coordination mechanisms for the refugee's response in Jordan is through the Inter-Agency Task Force (IATF), which composed of heads of humanitarian UN agencies and NGOs who contribute to the response and acts as a "Steering Committee", which is chaired by this UN-organization representative.

"….in Jordan refuges situation, coordination mechanism for humanitarian assistance organized Through Inter-Agency Task Force (IATF), chaired by our Representative. The IATF is composed of heads of humanitarian UN agencies and NGOs who are contributing to the response and acts as a "Steering Committee". Through the Inter-Sector Working Group (ISWG), the IATF oversees the system of Sector Working Groups which was established in August 2013, these sectors such as health sector , water, sanitation and hygiene (wash) Sector ,education sector and shelter sector…." coordination officer

This study showed that many humanitarian actors lack knowledge and experience about HSCM as noted below.

"Well, one of the problems that face the humanitarian response , demand assessment and supply process , and it's a common problem in humanitarian response due the chaotic nature of the crisis ,information sharing problem , lack of experience and knowledge for some people who working in humanitarian organizations". Logistics manager.

All the interviewees believed that effective and efficient SCM allows humanitarian organizations to respond and coordinate timely as well as share information among the members.

"As you know, Logistics is an important activity that differentiates between a successful and a failed relief operations, since it's focused on moving goods and materials to the vulnerable people of course, in our case the refuges. Successful SCM means we have a systematic work to avoid service duplication for all types of services, Supply chain management emphasizes coordination, information sharing between various actors, strong relationship that enable them to achieve lower operation costs and quick service response" Program manager

- **Coordination**

Both Vertical and external horizontal coordination are employed in humanitarian organization with the former at organizational level and the later at inter-agency level. This is supported by the by the following quote:

> *"Well, internal coordination I mean coordination between the different departments of the organization applies by doing regular meeting make brain storming sessions and take the feedback and comments. Coordination here is carried out at the level of senior staff. But external coordination, we coordinate with anybody (other organizations) in the humanitarian community served to avoid duplication in services "*coordination officer

The importance of coordination between humanitarian organizations in SCM was also highlighted by the interviewees as working together for a better response and coordination of information in SCM to ensure great success as quoted below.

> "*We cannot do everything alone, so this is the importance of coordination in our SCM to be existing. For an effective and efficient response to the crisis. Humanitarian organization must working together and share the required information "*program manager

Among the methods of coordination mentioned by interviewees are meetings, emails, workshops and brain storming sessions as noted below:

> *"...each Sunday we have our senior management team meeting where the country director attempts , the senior management team attempts from program and operation level and we always discuss latest updates from each department ,besides emails and*

document paper ,but with other organizations we coordinate through emails formal letters and meetings", project manager

The interviewees indicated that there was lack of coordination between the organizations.

"To speak frankly, It's very few coordination actually between them because as you know each organization trying to do the best for its own organization sometimes they are trying to hide information…… they can't talk about it in very honest way and this is create some problem for us and maybe lead for unsuccessful operation in the field "Field officer

The interviewees focused on IS as an effective tool to enhance coordination between humanitarian organizations

"*…information represent a key asset for the coordination between humanitarian organizations, but the most important things is the sharing of these information"* coordination officer

- **Information sharing (concept & effect on horizontal coordination)**

This study also sought to understand IS concept, benefits, type of information, how they share, barriers to IS and finally actions to bridge these barriers. The interviewees indicated that IS means, the information that is exchanged between the organizations for a mutual purpose for better response and reduce organizational cost. Additionally, and all participants indicated that IS serves as the main tool for effective coordination between the humanitarian organizations as confirmed below.

"Generally speaking, IS is the base of coordination inside the organizations and between each other's. Since with information sharing everyone not only the involved organization but as well everyone interested in Syria operation to see what is going on in different sectors, different areas, different geographies as well …..so everyone can visit and receive

the information and everyone can hand up the information there through the sector leads or through the sector coordination, to coordinate the data collection., that one will be used for development and planning,, trust between organization and it's as well the duplication service elimination". Project manager.

- **Methods of information sharing**

Interviewees offered a variety of methods that facilitate IS between humanitarian organization such as the portal website, meetings, reports, emails as confirmed by the quote below.

"The first tool, organizations reports where all organizations partners share the information through these reports. ...the second tool, is the activity information, database where all information, all organizations reports on that one, so everyone has an activity going on can report to the activity info toward the objective of each sector, so each sector at the beginning of the year they identify their plans in coordination with the government. All together, we sit together we set our object we set our plans, we make it available on that database then each organization each month they should report on the progress of towards their objective on that activity. So we share the information as well through that activity info and it's available and we produce the report on monthly basis, quarterly basis, every six months we produce the reports and we share it with all partners. So this is the tool we use to share the information". Program manager

Managerial barriers

- **Skills and capacity building**

There is lack of some skills and capacity in humanitarian organizations such as inadequate data management personnel who lack essential skill-set like data entry. This compels organizations to outsource for such skills in order to facilitate IS. This is confirmed by the following responses:

"…but there can be specific skill sets around data entry…Because if you have to hire additional people to have that, then that costs more money that they may not have. So then the burden falls on the current staff who always have other responsibilities as well. And so that's where it can get challenging. It can get challenging across all organizations, to be honest. You have somebody resign or go on maternity leave, and suddenly you have a gap in the IS that needs to be picked on". Coordination officer

- **Trust**

Another managerial issue that was identified is lack of trust among humanitarian organizations since some organizations take advantage of common IS platforms to access information from other organizations without making their contributions while others provide false reports because of lack of monitoring mechanisms. These findings are supported by the following quotes:

"Well, some of the biggest challenges we have around information is ensuring that all of the actors are identified and actively participating. Information that is coming out is only as good as the information that goes into them. So, if we have a program like activity info, and it doesn't cover, and you have only five organizations reporting instead of 10. But it doesn't show the whole story. It doesn't enable us to get the effectiveness of the complementarity. Logistic manager

"…To be honest, you can generally see where people are reporting and it's a bit weird . Like if somebody reports that every month they do 1600 or like a nice round number, I never trust round numbers. "Program manager

Organizational barriers

- **Competiveness between organizations**

There is competitiveness among humanitarian agencies that hinder effective IS across the sector. This happens when one or more organizations withhold information for fear of facing competition or when an organization feels sufficient in resources, and therefore fail to share information with others as confirmed by the following responses:

> *"So, there are organizations out there who may not necessarily be reporting and sharing information. They're generally the ones who have their own independent sources of funding. So, some I know, go for country prince companies and decide to do an activity.* "Program manager
>
> *"There is always this issue of competition. A partner is trying to show credibility especially among NGOs to enable getting high score, to get more funding, there are always…"* Project manager

- **Insufficient resources for sharing information**

The results revealed that some organizations are resource constrained to gather quality data for information processing and sharing, some are unable to balance between coordination of program activities and IS, while others simply neglect to share information due to lack of enforcement mechanisms. These findings are supported by the following quotes:

> *"And that sharing information is often driven by human resources and do people have the money to have enough start to be able to put the quality data in. And for a small NGOs it can be really challenging* "Program manager
>
> *"The second issue is the funding which is really challenging for all resources"* Project manager

"The only challenge would be is that how partners are balancing between their engagement in response and the humane thing documenting information to share? I think this is one of the challenges. "Field officer

- **Power**

This study identified that the humanitarian sector lack mechanisms to enforce IS as noted below:

"…there's no kind of enforcement on sharing of information. If some local NGO says, "Well, we're not going to share."Fine. Don't share." When it comes to enforcement, what it comes down to is, when we put in an appeal like we do on an annual basis, if you're not engaging in the information sharing and the coordination, then you can't" project manager

- **Availability and accessibility**

Although sharing information is practiced at interagency level, not all information type is shared but rather kept confidential as in the case of personal data for clients, and organizations have to comply with data sharing agreement as confirmed below:

"…they send us a list that we then say, "Okay, these people are getting full assistance et cetera." And when they send that list, we tell them to only send us the case number ID. So, without any other data or means, telephone numbers, et cetera. So, all that sharing of data is regulated quite closely with data sharing agreements." Project manager

"…we have strict agreements with them over the sharing of that data. We do have the partners who implement the other half, distribute their cards, et cetera. And so we do however share a limited amount of information with them as well. Basically, the minimum that's required to gather effectively informant background. Let's say like the golden rule when it comes to sharing beneficiary data." Coordination officer

"…I think that the confidential sharing protocols - the way we share information within coding, et cetera - is really strong. And this is one worth getting back to the data protection challenges. It's having these sorts of strong protocols around maintaining confidentiality, sharing encrypted files, et cetera." Coordination officer

- **Commitment of members**

This case identified lack of commitment to IS since no exchange of information among humanitarian organizations as stated below:

"…I mean, this is the commitment and the commitment from other organizations to be a part of this information sharing. It can be a challenge." Project manager

- **Security of information**

Information security featured as another barrier particularly between the government and humanitarian agencies where some information may not be issued by the government to facilitate humanitarian response since it is considered sensitive to public security as confirmed below:

"It only comes to when there's a protection concerned, and part of that protection concerned is personal information, personal data. And that's absolutely fair enough." Coordination officer

"When it comes to general information, that's no issues. When it comes to specific data, personal data, beneficiary data, we don't really have challenges because we have this over action data agreement which facilitates that process." Program manager

Technical barriers

- **Technology and overall information system**

The participants indicated technical related issues such as lack of timely response due to technological challenges and untimely data collection, accuracy of information generated and lack of standards as stated below:

> *"IT capacity itself. Very rare to find IT specialists who would be very acquired to work on such issues because they are few of them trained on the field, preparing reports. Second is the pressure of the work itself. You have one person is working for a sector of a value over $200 million dollars. Is a one man show where you know there is lots of pressure for him to show that... Those are the kinds of the things that IT faces, their challenges"* program manager
>
> *"There is no any standard information management system. Now we've talked about two information management system. One of the main challenges is how to make that two system to work together."* Field officer
>
> *"…the challenges related to the information is balancing between what is happening in the field result gathering and what happened at the head quarter of the organization. There will be always delays in putting information together and the reports they always take some time to be produced to what is required."* Coordination officer

Social cultural and religious barriers

- **Religious barrier**

Religion can be a barrier to IS especially during program implementation at community since some agencies are compelled to spend more than expected to change community behaviors through IS behavioural change approaches as quoted below:

> *"…we're working in the communities where there are very religious based whether Muslims whether Christians. Their issues related to cleanliness or issues related to taking*

more attention to the behavior change to reach their standards which are very expensive. Those are the issues culturally but not like the issue related to language or issue related to accessibility". Field officer

Financial barriers

- **Operational cost**

This case identified that humanitarian organizations may be handicapped by limited or lack of funds to install or operationalize IT which eventually affect IS. This observation is confirmed by the following quote:

"There always be delays introducing up-to-date reports, right? This is the main issue, what might be the challenge of the IT when it comes to the operational related costing and funding." Coordination officer

<u>Actions to bridge the barriers</u>

The study findings showed that UN organizations developed various tools to facilitate IS between different actors for a better horizontal coordination (Table 6-2), including: a) the first tool is the Inter-Sector Working Group such as health sector and wash Sector in August 2013; b) the portal website data base; c) organization reports; and d) the activity information which was mainly done through monthly meeting as noted below.

"Accordingly, our organization has develop a different tools to facilitate IS between different actors. The first tool is the reports, organization report where all organization and partners share the information through this report. So everyone can access the information through this with report. the second tool is the activity information, where we, database where all information, all organization report on that one, so everyone has an activity going on can report to the activity info toward the objective of each sector. So we

share the information as well through that activity info and it's available and we produce the report on monthly basis, quarterly basis, every six months we produce the reports and we share it with all partners. So this is another tool we use to share the information".
Program manager

Table (6-2): Emerging Themes (Case study 1)

<table>
<tr><td colspan="5">Main Themes</td></tr>
<tr><td>Managerial barriers</td><td>Technical barriers</td><td>Organizational barriers</td><td>Financial barriers</td><td>Other barriers</td></tr>
<tr><td colspan="5">Emerging Themes (Key Quotations in the text mentioned above)</td></tr>
<tr><td>A-lack of skills and capacity building</td><td rowspan="5">Technology and overall information system that include

A-information compilation

B- availability of information

C-quality of information (relevant and timely information)</td><td>A-Competition between agencies</td><td rowspan="4">Lack of funding led to operational cost such as

A-Poor investment in IT system Insufficient</td><td rowspan="4">A-Social cultural and religious barriers</td></tr>
<tr><td rowspan="4">B-Lack of trust.</td><td>B-Insufficient resources</td></tr>
<tr><td>C-cultural and language barriers</td></tr>
<tr><td>D-Security of information</td></tr>
<tr><td>E-Lack of commitment between members.

F- Power</td><td></td><td></td></tr>
<tr><td colspan="5">Organization Actions to bridge the information sharing barriers</td></tr>
<tr><td colspan="5">A- They developed the Inter-Sector Working Group such as health sector, water, sanitation and hygiene (wash) Sector, education sector and shelter sector.
B- Portal website data base.
C- Organizations reports monthly or quarterly, or annually).
D- Activity information (monthly meeting).</td></tr>
</table>

6.3.2 Case Study Two

Supply chain management

The interviewees begun discussions by highlighting the importance of SCM in disaster relief operations regarding effectiveness, efficiency and speed in supplying beneficiaries with relief supplies. In their views HSCM was defined as:

> *"Generally, supply chain in the context of humanitarian is a network of organizations that are involved in different process and activities to provides goods and services for the vulnerable people"* Director manager

> Moreover, they added

> "*SCM in the context of humanitarian concerned with logistics activities such as assessments ,procurement, , planning of material ,information and funding and service distributions in order to reduce the impact of disasters on people lives and it concerned with the coordination between different actors involved in the humanitarian response system"* logistics manager

Among the benefits of SCM stated by interviewees was the effective humanitarian response which is a result of successful SCM since it activates information flow and coordination among various actors to save time and human lives:

> *"We believe that the successful SCM can improve humanitarian response during disaster relief operations, it reduces the impact of a disaster for the people who are affected. and with the SCM activates such as planning, coordination between actors, information flows the logistics operations which is the core of any relief activity can enhanced and we get a better humanitarian assistance "* Field officer

However, several organizations have limited knowledge about the benefits of SCM as stated below:

"*HSCM and logistics it's the umbrella for humanitarian aid, unfortunately, several organizations have limited amount of understanding about the supply-chain management and the importance of logistics management and the logistics and the supply-chain management activates are considered to be an expense rather than an important strategic issue to be adopted".* Logistics manager

- **Coordination**

Similar to case one, this study identified both Vertical and horizontal coordination are employed across the HSC as confirmed by the following quote:

> *"Of course, inside each organization we have coordination between the different departments in the organization which is pretty simple and effective results and this coordination is conducted by meetings , emails ,memos ,sometimes workshops a well as in external coordination .currently , we have external coordination with other organization by meetings ,emails ….but the challenge is to what extent the coordination (externally) results are useful for each organization"* Coordination officer

The interviewees expressed their experience of having a better horizontal coordination for effective response in SCM as confirmed below.

> *"Currently, the coordination mechanism for the Jordan refugee response are through working group sectors ,that provides different services ,health ,food ,shelter ,water and sanitation….., these sectors coordinate and facilitate the flow of information between ISWGs."* program manager

Information flow or IS provides the best tool for effective coordination between humanitarian organizations as clarified below:

> *"Certainly, as I mentioned early coordination for the Jordan refugee response are through different working group sectors, in each sector we have monthly meeting, discussed the relevant issues. For example the WASH sector which aims to provide water, sanitation and hygiene services to the population affected by the Syrian crisis residing in camp and non-camp settings facilitate for the purpose of information flow and sharing communications between the members of this sectors and we have monthly sector achievement reports as well as other activates ,but the challenge here not the coordination itself but it is the information sharing between the organization which I think from my experience it is the best tool for effective coordination that is in many times behind the lack of coordination".* Logistics manager

- **Information sharing (Concepts & effect on horizontal coordination)**

As in case study one, one of the interviewees described IS as a platform for the coordination for all actors who are involved in the Syrian refuges response as follows:

> *"IS here, it's a platform. The whole information sharing is a platform for the coordination where each of the agency(humanitarian organizations) has their own access to that humanitarian site, to that government site, where they put all their input related to areas of work, beneficiaries, amount of money they have, how much they are doing everywhere by the time every month. That is the IS".* Logistics manager

Interviewees outlined the importance of IS as a vital element of coordination inside and outside the organizations like to inform everyone in the organizations with the relevant information, avoid of overlapping, transparency between the organizations, effective response, helps in documenting all good lessons learned for innovation as well as cost effectiveness as confirmed below.

"Many things, the transparency of who is doing what, where so they will be, no overlapping. You cannot find two agencies doing the same thing in one place because they are sharing information. Effective response, also cost effectiveness. When you have information, you would be able to make analysis to see with that amount of your accounts you have done how much you managed to do services or activities. And then from the lesson learned you can always reduce the cost or make it a cost effective. It will increase efficiency of the organization. The very last one, the very important is the documentation; of course, it helps in documenting all good lessons learned for innovation". Program manager

- **Methods of information sharing**

One of the interviewees indicated that emails and reports are shared through the website and portal are the main methods for IS as confirmed below:

"I believe that an important consideration for the topic of information sharing is the how to share the information. Emails and reports. All the reports you should see them on the website as well as meetings and activity info since all partners where they discuss challenges, issues, strength, they agree on standards, they agree on policy. The minutes of those meeting you'll find them useful". Coordination officer

"The sharing of information is generally done by meetings and emails. I think meetings remain a good source of information sharing, although I do believe that it shouldn't be the main purpose of a meeting because that should just be a newsletter. It's more about sharing information in order to improve how we work together. That is an appropriate

thing for a meeting; just giving situational updates and then email. For example, we meet on a weekly basis on the situation in the northeast border and developments around that, the challenges around that and habits are evolving. Yeah, that's pretty much the main thing at an interagency level". Field officer

Managerial barriers

- **Skills and capacity building**

This Case study revealed that some organizations have need for specific skill-set to facilitate IS such as information management. As a result, they are compelled to train their staff in order to address such unmet needs as confirmed below:

> *"We have trainers because we have the training centre and we have coordinative program, project managers in the field all the time but honestly it's still we need to be able to build the capacity of in putting the information in the importance of documentation I say again"* Program manager

- **Employee retention**

Some organizations experience employee turnover due to poor remuneration. This suggests that they cannot retain good and competent staff for long since they lose them to well-paying international agencies. This is confirmed by the following response:

> *"Yes and no yes because a lot of good staff are being .... By international donor they get much higher salaries so yes in that way and that the problem".* Director manager
>
> *"We need sometimes according to certain projects but usually our IT officer can handle it.* "Project manager

- **Lack of trust**

Lack of trust is another information barrier that was identified in humanitarian sector although not significant since it is critical to coordination of IS as indicated by the following quotes:

> *"Yeah mean and our nature of works especially when were out in the field doing research you know we have to trust the researcher to make the right decision. It's very rare that they don't but usually we've prepared them enough. We have consultants, we have committees, and we have, to make sure that before we send the researcher out into the field they are as prepared as they can be".* Project manager

- **Lack of motivation to use information**

Although some organization are able to gather data and process information, they still failed to motivate their staff to use the information for progressive program management as confirmed by the following quote:

> *"If you have the information it is easy to share and problem is after the information sharing how you can motivate the people to use this information to design their intervention and to monitor their intervention. This is the main challenge but in general of information sharing itself is not a challenge, the challenge is either before when you combine the information, collect the information..."* coordination officer

Organizational barriers

- **Structure of the organization**

Some organizations lack harmonized structures to facilitate IS coordination of IS as confirmed below.

> *"If were working together on a project yes but otherwise the people who do the coordinating are the headquarters not us. We don't do coordinating between the centres. We work as*

partners with our headquarters on a project on something. But if there's coordinating to be done it's through seniors I mean the one who works at the headquarters." Program manager

- **Competiveness between organizations**

Although the findings indicated that competitiveness is a barrier to IS, the impact still minimal since sharing information itself is essential for one to receive information as confirmed below:

> *"It's not too much major factor actually because it's, the information that we have everything is available for everyone. So if you share the information it will be available for the public and it will help the others to act or to execute their projects rightly and even identify their needs accurately. but no I don't have seen this between organizations they competitive whose have the important information*". Coordination officer

- **Insufficient information sharing resources**

When asked about insufficient resources as a barrier, the participants mentioned inadequate time for documenting the information, inadequate funding which also increased competition among agencies, and uncoordinated IS due to involvement of many actors as stated below:

> *"Not just the funding the limited funding makes too competition, so that's lack of coordination at the external level internally it's the time factor not enough time because you are in the field to coordinate with each other it's documentation in the importance of documentation".* Project manager
>
> *"…the main barrier is there is multiple actors, many actors sharing information. Some types of information if it's not coordinated or of some types of information if it's just collected in uncoordinated manner, then it will come up with contradictory results and this is a challenge actually…. the problem is its uncoordinated data collection of within*

indifferent areas. If it's coordinated then you have, we would, no you will have effective information given back to the sector and as well as to the partner." Program manager

- **Accessibility and availability**

Some participants indicated that it is difficult to know the kind of information available and therefore difficult to access it. Other issue that limited sharing is confidentiality and privacy as a requirement for ethical consideration. This is confirmed by the following responses:

> *"I think in Jordan the main thing would be knowing what information is out there which is again why we made our website to be an information platform because it's very difficult to know what research or what projects because all of the NGOs in Jordan they report to the donor."* Coordination officer
>
> *"the confidentiality of information within the health sector we don't have. The confidential issues is the things that related to the individual basis, that maybe a breach his confidentiality or bribery case. Normally, not normally no one is sharing this because it's the ethical consideration. So we don't share the individual's case information if you're taking, talking about individuals cases. But the general information related to the activities itself, the progress, the monitoring of different activities this is something not, we don't have confidential issues".* Program manager

- **Commitment of members**

Lack of interest and commitment to IS among partners could be barriers, suggesting the need to motivate actors to make efforts in this area as stated below:

> *"The main challenge is not availability of information the challenge is how much the partner are interested and committed to share this information. Sometimes you need to*

make some efforts in order to them, motivate them to share the information." Coordination officer

- **Security of information**

The issue of security was also raised as a barrier to IS particularly when dealing with the government since some information is linked to security issues.

"Sometimes with the government they are concerned, sometimes they have some concern about even sharing such information. And yeah sometimes we ask for information to be shared with this sectors in order to be used for planning purposes ". Coordination officer

Technical barriers

- **Technology and overall information system**

This case study found various barriers to IS related to technology and overall information system such as inadequate funding, data collection and overall management using computer, difficulties in designing information system, lack of standards and lack of priority from donors as quoted below:

"There is not enough of the funding organization or privet sector that will that's another problem its they don't see the value of that in sense of putting a lot of money for it so they have to raise all our different kind to bring in the CRS system but we did as an organization allocate from the money that we raise to …" Program manager

"Inputting all the data the mind-set to being able to say this important as documentation getting all of the information out of people head then putting it on to computer…This is your responsibility organization … your organization responsibility to build information system …" Coordination officer

"I think the hardest thing is designing it and then making it a user friendly as possible… to make sure because you're customizing something to fit your work so it's not something that you can just take template and you know. So, you know making it fit your work flow. So and then of course that comes as you use it and you update it you revise it so it comes with time." Field officer

- **Bureaucracy**

Bureaucratic barrier to IS was identified to be common with the government since it does not recognize information system as an official means of IS as confirmed below:

"…their system and they don't consider it as an official way to share the information. So sometimes yeah we share the information in writing because it's the requirement of the government but for UN national partner, international partner we use the electronic measures to share." Field officer

Actions to bridge the barriers

As in case study one, several tools such as Inter-Sector Working Group , Portal website data base, Monthly/quarterly organizational reports and Monthly activity information meeting were employed in IS between humanitarian organizations in order to avoid services duplication and overcome these barriers as shown in table (6-3). This is confirmed by the quote below

"*…based on the sector mandate, our partner coordinate and share information by tools developed for the Syrian emergence response in Jordan ,we have an activity information and all partners meet each other's discuss many relevant issues, we have the reporting system for each organization that put it on the portal website, besides the regular meetings "*.Program manager

Table (6-3) : Emerging Themes (Case study 2)

Main Themes		
Managerial barriers	Technical barriers	Organizational barriers
Emerging Themes (Key Quotations in the text mentioned above)		
A-lack of skills and capacity building	A-Technology and overall information system (inadequate funding, data entry not complete and overall management using humans ,computers, difficulties in designing information accuracy and time , lack of standards and lack of priority from donors).	A-Competition between agencies
B-Employee retention		B-lack of Insufficient resources
C-Lack of trust.		C-Security of information
D-Lack of motivation to use information	B-Bureaucracy	D-Availability and Accessibility of information
		E- Lack of Commitment of members
		F-Structure of the organization
Organization Actions to bridge the information sharing barriers		
A- They developed the Inter-Sector Working Group such as health sector, water, sanitation and hygiene (wash) Sector, education sector and shelter sector. **B-** Portal website data base. **C-** Organizations reports monthly or quarterly, or annually). **D-** Activity information (monthly meeting).		

6.4 International Organizations (NGOs)

Thirteen interviews were conducted in three international-organizations based which the cases findings with the main themes are explained in the following sections.

6.4.1 Case Study Three

Supply chain management

Interviewees explained the SCM concepts focusing on the right fives, right a material or services, the right time, with the right amount, the right quality and right place. They mentioned SC started from the refugee's assessment needs in the field to procure the supplies through their organization and ends by distribution the needs in the field.

> *"…there are many activities or functions of the SCM like planning implementing controlling and others, … logistics is very important to cover the five rights which is to procure the right a material or services required in the right time and with the right amount of money because we are working depend on the budget and the right quality of material we are procuring and to deliver to the right place in the right time you need so this the five right for the logistics which we always try to cover and to provide for our problems including to the supporting of planning and design of other programming".* Logistics manager

The interviewees indicated that the SCM activities started from the field then several manual stages until its ends to the main requester to distribute to the vulnerable people as quoted below.

> "*….first everything starts from the field, so in clinic let's say that we need this kind of medication as a site manger ……, site manager of course need to communicate this to head of departments to approve the request .So we fill a form there and it should be signed by the project manager or the head of department, this goes also to the finance department to*

*make sure that we have the budget for it and we are allocating the money and everything approved by the donor .then it goes to the logistic department , the logistic department start with the requesting for quotations, and look at who are the best price and the best quality ,the quality of the service or the product this our organization regulations , so after that the logistic hand this to the procurement team to prepare the request from the vender to provide this kind of services and then of course it goes through the same series need to be request to be signed by the program manager and of course the finance department and then of course the logistic and sometimes the country director if the number of the figured and the amount at certain amount .The products come to the warehouse, warehouse also they specify the products and after that it goes to the main requester ".*Logistics manager

The benefits of SCM as identified by interviewees are provision of relevant information inside the organization and with other organizations for a better response, planning ,control and build trust with other donors to give the required money as noted below.

" *It is very important to have official SC in any organization or any work because supply chain is the chain to provide needed and important information to connect all different prescriptive department in any organization to give up to provide the require services or to responds to any services requirement and coordination with other relevant organizations ,better project design and planning ,controlling so whatever this information we have its very important to find a role for the supply chain connected with a different programs in the ground to give them the information they need to build the project proposal because as I mentioned before that any of those project or program proposal it depending on the information they can get the correct and the needed information for successful of delivering the service* "Coordination officer

"Sure it give the trust with other donors to give you the money and to cooperate with you if you have an efficient supply chain management that's mean you are able to handle a big amount of money and deliver the services or implement a big programs in the field and this is very important" project manager

- **Coordination**

Vertical and external horizontal coordination were practiced across the humanitarian organization as the major activity in SCM for the service provision. However, horizontal coordination was limited. This is confirmed by the following quote:

- "*Coordination is the heart of SCM*, mainly *our coordination inside this NGO ,is how to share information we are conceder as an operation department ... operation who are implementing there work as technical and support in the field and for the program so our main work as logistic we have to work with the finance department , we have to work with different work department in this NGO ... In the information department, Human resource department and this is very important that logistical supply chain management department have a link with all different area inside my organization to collect the needed information and to understand exactly what type of services we are delivering this is internally*" Logistics manager
- "*Externally is very important if we are working in medical field with NGO what kind of service we are giving to other benefiters and it is very important to know other organization who are working with the same field ... same service and we have ... we do communication with some logistic and SC department so we share information about supplier list about type of material they procure about kind of service , transportation with whom they are dealing and how they are working and setting up their operation is very important to have*

linkage with this people because sometime we are as organization we have same role in the field and sometimes we are working in the same location other people have a different information …. It's very important to know those people who are working together as a team in the field to make more easy and to share as much as we can for information because this very important ". Coordination officer

- **Information sharing (Concepts & effect on horizontal coordination)**

The interviewees highlighted IS as the main mechanism for coordination using different methods such as meetings ,formal letters, emails, but the problem what they have is the lack of coordination.

"*We have coordination with other organizations by meetings, formal letters, emails…. but this is not …. It's very few coordination actually because as you know each organization trying to do the best for its own organization and to hide information…… sometimes there is a problem with other supplier or another location they can't talk about it in very honest way and this is create some problem for us , the most important thing in this field is the experience if you have an experience in something and there is no much information sharing from different organization it will lead for unsuccessful operation in this field "*Project manager

- **Methods of information sharing**

Different methods were for IS between the organizations, including meetings, formal letters between the organizations, workshops through training and emails as quoted below.

"*….sometimes you can implement one program from different type of organization in same place of course the meet each other's ……. For also the operation we are supporting our own program people to deliver the service and to implement these programs by emails or formal letters ".* Program manager

"…*sometimes due to the limited budget we cannot do everything so by emails or formal letter we transfer some cases to other organizations in the way that called referral organization …. "*Logistic manager

Managerial barrier

- **Employee motivation**

This case study found that employee motivation is a major barrier to IS particularly among organizations that do not provide satisfactory financial incentives to their staff. This leads to high staff turnover of workforce with relevant skills for overall data handling and knowledge management in favour of well-paying agencies as confirmed below:

"So international organizations may pay more than local government or so everybody wants to work with international organization... Because salary is higher. They pay more, and then you have people who once get into NGO sector they are afraid to leave. They don't want to leave, because salary is good in international organizations." Project manager

- **Skills and capacity building**

Lack of relevant personnel was mentioned as a barrier to IS that limit some organizations to respond to humanitarian need effectively or even liaise with their donors. This is confirmed by the following quote:

"…at this stage we don't have enough information system and it's not very well I mean there is no very well instructor for this information system which leading us for providing our full capacity of services which is very important and what we need to focus on not only from our side but also from donors side they have to highlight and working in sharing information and coordination…" Project manager

- **Lack of trust**

Some suppliers and humanitarian organizations don't tell the truth when a problem arise which poses a challenge even to experienced workforce because of lack or inadequate IS as indicated below.

> *"…we have problem about coordination with other organization as I mentioned before That providing the same service because as I mentioned some of those organizations they are trying to hide the information from different organization maybe for their own benefit or for maybe mistake happen with them before"* Coordination officer

Organizational barriers

- **Competiveness between organizations**

Some organization protect their information against access by partners especially with information related to donor funding for fear of facing competition. The result is limited coordination and poor interventional outcome as confirmed by the following quotes:

> *"…there is always this challenge of how can I put it, being jealous and protective over information that you have. It happens all over the world you know, you have organizations that are dependent on donors funding and limited funding and then you have to think about your future. So, sometimes you are hesitant to share the information which you have because maybe your partner turn into your competitor you know."* Coordination officer

- **Insufficient information sharing resources**

Lack of adequate resources was another cited barrier to IS since some organizations face problem with gathering information as result of field or partner related issues and uncoordinated activities among actors. Consequently, there is delayed planning and response as confirmed below.

"… It's very few coordination actually because as you know each organization trying to do the best for its own organization with their limited resources sometimes they are trying to hide information…". Program manager

"…if we are providing the same services for sure their will coordination communication not enough coordination because as I mentioned before it will became like a challenging from the field who providing this services so this is one of the obstacles from our NGO or our organization to sharing the right information" .Field officer

- **Security of information**

Some organizations are not allowed to release official information to the public, including publications since it is treated as a security issue particularly by the government as confirmed below**:**

"…there is this other program which is working with health in South Syria. We are managing it from here but it operates in South Syria, and there we have to have valuable profile that you are providing aid, it should not be official, you cannot publish your information not ,because its confidential but for the issues of security." Program manager

- **Accessibility and availability**

The issue of confidentiality limits availability of and accessibility to personal data during IS process as supported by the quote below.

"We don't share the documents that are related to personal files of our students. Those kinds of information are kept under key, and so is information about their background and family status and any other personal information we don't share things". Coordination officer

Power

Program implementers are responsible for deciding what to be shared due to lack of policy guidelines. While this facilitates IS on one hand when dealing with willing individuals, information is kept private by some actors due to lack of clear regulation on what information to be shared and not to be shared as quoted below.

> *"But I think that there is no written policies, but it is left to us, implementers of the program. It's up to us to judge what is danger and what competition* is or what not. *So far, I was not in a position where I had to think twice as to whether I should share some information".* Program manager

Technical barriers

Some interviewees indicated that their organizations had weak information system, lack of donor attention on building information system, lack of clear structured information system, inadequate or irrelevant information sharing among partners, lack of internet connectivity and accessibility to and lack of unified platform for information sharing as stated below. The overall effect is limited IS.

> *"In this NGO there is still a weak information system and staff…… very well we trying now to develop new information system which connect a different department with each other so we are all can use and be more useful information from different type of organization so we are working on this with headquarter and different NGO location and offices we are collecting enough information from different offices to build the very useful and enough well build information system to help us implementing our work".* Coordination officer

> *"This is what the problem that the donors doesn't provide full, they don't pay full attention for the important of the information system what they care about only to deliver the services*

*for the benefiter's but they are not highlighting or prioritizing the information in the structure because it's very important to build and invest an information system which lead to more successful operation…".*program manager

Language barrier

- **Standards**

Language barrier may hinder IS in the humanitarian sector, and even where the same language is used, terminologies or professional jargons may still be a problem to information sharing. This is confirmed by the following responses:

> *"It's not standardized how you share information, we don't use same language (terminology) to describe certain things, databases I mentioned to you it is very difficult for us to understand the information put in. What is meant by that, and what else would be there to share information…"* Coordination officer

Manual Supply chain

> ***"****Yes sure we have challenges and obstacles From the field"* Field manager

Socio-cultural and religious barriers

- **Culture, tradition and religion**

Socio-cultural barriers such as tradition, culture, religion, and domestic violence hinder IS during response to humanitarian needs. For instance, they believe that it is a taboo to argue with parents or teachers limit learners to pose questions in class. Similarly, failure to disclose domestic violence limits progressive implementation of information-based interventions to promote behavior change as quoted below.

> *"Its culture, tradition which is here for 2000 years or even more, so they are raised in this culture. If you are raised as a child in this culture, you are raised as a religious person,*

*religion tells you don't question, just follow… parents tell you don't argue with me, I am your father, I am your mother and then you go to school and teachers are like, I am your teacher you don't argue with me. So how can you expect somebody's with this. To raise questions, I don't agree, I have different opinion. You need hundreds of years to change this".*Project manager

"…people would speak more about their problems or husband hit me and asked for divorce. Would you do this here? No, you don't discuss about problem from house, it's between me and my family and nobody here discusses it. And it's my husband's right, he is head of the family…" Project manager

- **Corruption**

Humanitarian actors encounter corruption practices during sharing information since some individuals expect a bribe in return for shared information or to assist their partners as indicated below.

"Corruption, corruption is same in my culture, you don't consider it as corruption… so it's same here in Middle East, if you help me I will help you in future and that's how things work". Project manager

"No, and that comes from education from western capitalistic idea of copyright, that I have information and I will get money for that and if you need my information you need to pay."". Project manager

- **Quality barriers**

The results also indicated the issue of information quality as there was lack of relevance in some of the information shared among the supply chain partners as confirmed by the following quote:

"Some information is irrelevant …" Logistics manager

Actions to bridge the barriers

International organizations are willing to share demand information in order to avoid services duplication. Accordingly, these organizations have many activities in place (Training staff, Portal website data base, organizations reports on monthly or quarterly, or annual basis, and activity information monthly meeting) to overcome these barrier straining of organization staff as indicated in table(6-4). This is confirmed by the quote below

> *"Generally, our organization is a partner in the humanitarian response for the Syrian refuges and vulnerable Jordanian people. Mainly the mandates to provide the essential health services to Syrian refugee women, girls, boys and men and vulnerable Jordanian people. so from this vision and to success this response, we trained our organization staff how to share the information, and we can help others if they asked, and we are partner in our sector providing them timely report and the required information and we have a regular meetings with other partner ".*program manager

Table (6-4): Emerging Themes (Case study 3)

Main Themes			
Managerial barriers	Technical barriers	Organizational barriers	Other barriers
Emerging Themes (Key Quotations in the text mentioned above)			
A- lack of skills and capacity building B-Employee motivations. C-Lack trust	A-lack of donor attention on building information system B- Inadequate or irrelevant information sharing among partners. C- Lack of clear structured information system. D- Lack of internet connectivity and accessibility. E- lack of unified platform for information sharing	A- competition between organizations B-Insufficient resources to share information C-Power D- availability and Accessibility E-Security of information	A- Language barrier. B- Culture, tradition and religion. C- Corruption
Organization Actions to bridge the information sharing barriers			
A- Training staff and other if they asked. **B-** Portal website data base. **C-** Organizations reports monthly or quarterly, or annually). **D-** Activity information (monthly meeting).			

6.4.2 Case Study Four

Supply chain management

The interviewees explained the SCM concepts focusing logistics activities and information coordination. They mentioned that SC started from the field to do the assessment needs for both

Syrian refuges and vulnerable Jordanian people, plan the project for fund, procurements, warehouses and distribution the materials to the beneficiaries as supported by the following quote.

> *"The first step it's start by the assessment in the field ,our team visit the refuges in their camps or host communities and the Jordanian vulnerable people in their homes to collect the required data to provide it to the project manager in order to obtain the appropriate fund ,after that we coordinate with the logistic department to procure the required material which takes times because of long procedures .Yes , the logistic department deal with this material, put them in the warehouse then my program team will on the daily bases depending on the activities go to the warehouse take the material that's needed in distribute this material in the field and install it ".*Program manager

The findings showed that no project can succeed without the HSCM since it facilitates response to disasters, coordination of activities and sharing of relevant information among the SC members, better planning and activity control and building trust with donors. This is explained in the following quote.

> *"Actually, without going through this supply chain activities, no project will be successes because by this SC , if I know exactly what the project is , I know exactly what is requested from me and the project manager was know what is requested from him …. Then everything will go smoothly during the project if I don't do this supply chain there is no meeting, no organizing, nothing … and sometimes I feel there is a lack of communication this is goes immediately to affect the work …. Based to my experience … sometimes you don't communicate with me for example you didn't send me what you want as project manager t to do next week and I don't do the list then everything will stop the service, this supply chain helps the coordination by give the assistants, if I don't go through it step by step the*

project will not succeed and I will not have donation for next time …… everything will stop if I find any problem with my project why would I give you donation for the next time ".Logistics manager

- **Coordination**

Both external and internal coordination were carried out with the former on minimal scale. All interviewees agreed that coordination activity is very important in humanitarian response to provide services as stated below**:**

"The coordination is very important ,of course how to react with others ,inside and outside the organization, in general in our organization we coordinate and information we need its smoothly and simple and make sure that everything is going and in the right way based on the procedures , standers and the roles of our organization, this is internally .and basically all departments coordinate even by e-mails or mostly weekly meetings .now , recently because we are member in the sector of water and sanitation and working as other members for the same purpose we have coordination between each other in form of meetings ,reports, put the data in the portal website". Coordination officer

- **Information sharing (Concepts & effect on horizontal coordination)**

Interviewees stated that IS was the main tool or back bone for coordination that ensures the information is available and accessible by everyone for a quick and better response as confirmed by the quotes below.

" Certainly ,IS means the information is available and accessible for everyone for a quick and better response , I believe that Information sharing is the backbone of coordination in supply chain……we can't coordinate if there is no information to share ,and by information sharing we have a quick response in humanitarian assistance ,more people

save lives ,better organizations activities such as planning ,implementing projects ,monitoring and controlling .any way in our organization ,we share the demand information of the beneficiaries with our team and with other NGOs I need to be careful what kind of project to share the beneficiaries demand information's , If it reputational the households there is no much secret here and nothing be personal if it's a project but specific for specific matter then you don't share the information…in general yes we have a limited demand information to share but we can give the support for other organizations who are responsible for implementing their projects because sometimes due to the limited budget we cannot do everything so by emails or formal letter we transfer some cases to other organizations in the way that called referral organization …. " Project manager

- **Methods of information sharing**

This case identified meetings, reports, emails and portal website as the different methods that facilitate IS between humanitarian organizations as confirmed below

"But we share some of the demand information through the reports or portal website sometimes by emails or paper work or the regular meetings with other organizations…" Coordination officer

However, there is limited demand information to share between the organizations as quoted below.

"Of course, yeah I mean if I shared information that will lead to better coordination ….. But also, not share everything related to the demand information because the information it's not really I mean I share but a general information …So the information share up on you request and sometimes its limited". Field officer

Managerial barrier

- **Staff experience**

Some agencies have staff with limited knowledge or experience in determining the type of information to be shared when need arise. As a result, information sharing is limited since accessibility and availability relies on individual judgment as noted below.

> *"I guess experience help so on so, you know, if you have the--a new clubs that have been coming in and they give them responsibility they don't always know how long these questions of; what can be share or shouldn't be shared, what's personal information and what should be kept secure, what should we be very willing to share because it helps the community. So that can become with experience and, yeah, there's old labors kind of groups, kind of works…"* Project manager

- **Skills and capacity building**

Donor funding does not cover for capacity building of the staff yet it is a key area of need, including data management. This suggests that the agencies need to find alternative sources to address this need.

> *"Training is at the same situation, and latest software again is a challenge and the HR system because these are not funded by the donors so we have to build in our own … Our staff are capable but they need to be trained they need to be updated and they need have their capacity build all the time but this is again another gape".* Project manager

Organizational barriers

- **Competiveness between organizations**

This study established that some information is not shared among the organizations because of fear for competition despite the collaborative mechanisms like group forums and common portals as stated below.

"Because there is the level of competition sometimes and not all information sometimes given because of this competition thing so you would receive certain information …. Certain level of information at these meetings or probably not everything … so we try to coordinate as far as we can but it's not like I wouldn't say it a perfect scenario …… each manger have in term of coordination" Program manager

- **Insufficient resources for sharing information**

Some organizations practice coordination to a limited extent and thereby little information is available to ensure effective and progressive monitoring of the program. For instance, there is a challenge to determine the cases reached during response and therefore lack of equitable service as confirmed below.

"Still coordination between humanitarian in Jordan you can say in the early stages very challenging and there are few coordination …And would be a lot of savings than if proper coordination mechanism were putting in …" Coordination officer

"I mean we do have the whatever it takes like the server the computers but honestly because we are tight with budgets and we are receiving funds from different donors we can't go as broad as we wish to it's pretty tight our laptops for example are not up to the standards we end for we are trying to manage but it's not as good as we hope…". Coordination officer

- **Availability and accessibility**

Ethical consideration is strictly adhered to when sharing information with partners, particularly with personal data of beneficiaries as stated below.

“I’d say also a major consideration is just like data security where you’re willing to share or you’re not willing to share. So if it’s like personal beneficiary data and--then, other than that the barrier it’s just--you know, it needs to be a strong consideration in how you store data, how you share.” Coordination officer

Technical barriers

- **Technology and overall information system**

Inter-agency IS only works through a common portal or case to case based on sharing agreement/protocols. Besides, the performance indicators are not unified among actors responding to a common need, suggesting high chances for efforts duplication. This is confirmed by the following responses:

“Well, we don’t share information with other NGO’s and if we have to share information with other NGO’s , there are certain information sharing protocols in placed at both sign on. But these protocols with insure data is kind of compared it to mu NGO is sensitive can’t be further shared it’s a respective and …No information sharing ….We do share this information with our donors our donors for example the UNHCR if you go to their portal now, you will see that they have a monthly fact sheets that they produce part of it you will see the health sector the figures there are fed by us…”. Coordination officer

“…the challenge with our information system is that the indicators remain un unified between all donors so what we are trying to do is that we are trying to unified all kind of indicators all different donor in order to avoid any duplications because maybe you have the different naming of all indicators but at the end of the day it is the same count that what you are trying to count so what you would end up with duplication so organization up to

data being collected against all different donors is what we are trying to enforce currently". Program manager

There is also use of different IT system in humanitarian organizations which leads to discrepancies in the information sharing process. This result is confirmed below

"The second the IT is facing is they could not catch up with the entire firm, because again the nature of the response. Yeah, there is every time some discrepancies, some information regarding the funding. Sometimes you get in kind, sometimes you get funding". Coordination officer

- **Language barrier**

When asked about language barriers to IS, it was established that lack of the ability to speak local language among humanitarian workforce poses a challenge to sharing information as confirmed by the following response:

"Yeah. I think those people that don't speak the language and then that would be a challenge for sharing information." Field officer

<u>Actions to bridge the barriers</u>

Information sharing is achieved through the Syrian refugees' portal website, meetings, emails, organization reports and direct sharing with other NGOs if they requested in order to overcome the barriers to IS as quoted below and summarized in table (6-5).

"*As I said early, effective information sharing lead to the right activities and the right strategy way. I think, It's important to work to gather for better decisions and response, so our organization share some demand information through the Syrian refugees portal website which we are member in the wash sector (water and sanitation sector, and through* *meetings ,organization reports or emails and we share carefully the information to other NGOs if they asked”.* Logistics manager

Table (6-5): Emerging Themes (Case study 4)

<table>
<tr><td colspan="3">Main Themes</td></tr>
<tr><td>Managerial barriers</td><td>Technical barriers</td><td>Organizational barriers</td></tr>
<tr><td colspan="3">Emerging Themes (Key Quotations in the text mentioned above)</td></tr>
<tr><td>A- Lack Skills and capacity building</td><td>Technology and overall information system that include
A-quality of information (relevant and timely information)</td><td rowspan="3">A-Competition between organizations

B-Insufficient resources to share information

C-Availability and accessibility</td></tr>
<tr><td rowspan="2">B- Staff experience</td><td>B-information compilation</td></tr>
<tr><td>C- Different methods of IT system</td></tr>
<tr><td colspan="3">Organization Actions to bridge the information sharing barriers</td></tr>
<tr><td colspan="3">A- Sharing information with others if they asked.
B- Portal website data base.
C- Organizations reports monthly or quarterly, or annually).
D- Meeting.</td></tr>
</table>

6.4.3 Case Study Five

Supply chain management

Interviewees demonstrated awareness of various SCM concepts such as demand assessment, procurement, and distribution of goods to the beneficiaries as well as coordination activity. This finding is supported by the following quote.

“From my perspective, the process of SCM are:-Assessment , evaluate, ,mobilize funding , procurement ,provide assistance to beneficiaries and coordination other NGOs, the

assessment starts from the field ,other steps inside the organization ,coordination its basically inside the organization and with other concerned organizations". Logistics manager

During crisis, logistics activities and coordination are the most essential aspects for saving beneficiaries' lives. Accordingly, the benefits of SCM from the viewpoints of the interviewees are better assessment, planning, activity control, strengthen the relationship between the related parties by coordination, and build trust with other donors. This is explained in the following quote.

"… in time of crisis the most important thing is logistics and coordination in order to save refuges lives this is the most important thing and this the role of supply chain activities also it would reflect a lot, it will save time, it will ensure the quality of service , and it will show where's a gap if there is any delay or if there is any bottleneck or any difficulties faced by the work save beneficiaries lives, strengthen the relationship between the partner through coordination ,better planning for refuges demand, successful supply chain lead to win the donor trust for a good fund". Project manager

- **Coordination**

All interviewees agreed that coordination activity is very important in the supply of the service they provide, and they clarified between vertical and horizontal coordination as quoted below.

"Absolutely, coordination is very important activity in SCM and especially in humanitarian response as well ,coordination in SCM is a crucial activity between all different departments in the organization that implement the programs for the refuges , so you need to have a lot of coordination between these people to support the services we provide to , generally we have coordination and communications between different departments in my NGO such as logistics ,finance and HR, and honestly this is going easy .other hand we have coordination with other

humanitarian organization but this is limited and depends on what we coordinate and why coordinated in many times it's hard to coordinate or to be accurate it is hard to share information with others because in many time the information what you have its your power for fund . but if it is general information regarding refuges we can share and coordinate by many different tools like monthly meeting ,emails Syrian refuges data base". Coordination officer

- **Information sharing (Concepts & effect on horizontal coordination)**

Interviewees demonstrated their understanding of IS as the availability and access to information by all actors for quick and better response. IS provides the main back bone for coordination through meetings, formal letters, emails, portal website, reports and activity information as quotes below.

> *"In my understanding, IS is the basic element of coordination in SCM between different units in the organization and between the other humanitarian organizations as well, so from my experience IS is the exchange of information for everything that leads to an impact on productivity, it can only start when there is efficient communication sharing between organizations. Because like the specific example of the Syrian crisis, and the refugees in the camps in…. so if you can notice that different segments of responsibility have been taken up by different organizations. But Information sharing is controlled by procedures between organizations and within organizations and is based on the benefit of the information. In order to enhance our work, the information needed for my work and the information differences from one part to another in the same organization and with other organizations must be shared."* Logistics manager

Additionally, there is limited demand information sharing between humanitarian organizations as quoted below.

"… sharing demand information with other humanitarian organizations depends upon the kind of partnership that you have and the kind of information that you are willing to share. Obviously, if there is an information which is larger in nature which has given added advantage and benefits, but what I see that all the organization very restricted in sharing refuges demand information ". Program manager

- **Methods of information sharing**

Information sharing among humanitarian organizations is achieved through face to face meetings, reports, emails and Syrian refuges IS portal website as confirmed below

> *"Yeah. Right. I mean, email is used massively. But then when it comes to reporting which is also information sharing then that's like I said there's a couple of online tools that UN--organization developed to allow us to do that monthly reporting. So, that's kind of software that they've driven, and designed and built to do that. Also, it could be--it also changed a lot of this data collection. like when doing households assessments instead of just going with a paper and pen is now all done on tablets and it's a surveys that program going to the tablets as well as the meetings that organized by the sector working group".* Coordination officer

Managerial barriers

- **Skills and capacity building**

This case study found that lack of skills among the organizational workers hinder IS in the humanitarian sector. The major need was identified in the area of data analysis as confirmed by the following quote:

"Of course they needs a lot of training for each department based on request actually also for example I need training for analysing data because I don't how to do that actually before I took this training…" Program manager

Organizational barriers

- **Power**

Although IS was practiced at inter-agency level, some organizations did not allow their staff to share information directly with other organizations except through relevant authorities. Nevertheless, only some type of information was open for sharing. This is confirmed by the following responses:

"…with NGO, inside or even outside and actually it's not allowed to meet and share directly I have to go through the coordination …. Coordination can share, it's not a problem we have to make this information not offer to everyone but of course any NGO's asking for the information for some level yes we can share it and other NGO's understands that we can't share everything…" Project manager

"…It's not much about not wanting to share information, it's about feeling that I have hegemony over this, so I don't need to tell you what I have done, what I have not done, you know. These things can happen…" Logistics manager

- **Accessibility and availability**

Beneficiaries' details are not available for sharing except for minimum information that can facilitate response action. Besides, sharing of information was motivated by other interests such as the case of donor and the recipient organization where much information was exchanged than among implementers so as to ensure sustainable funding. This is confirmed by the following responses:

"…because the beneficiaries' information is something confidential you don't share with anyone even the data base has password…I can't share for example their even the address because they are refugees and they have tensions so they don't like to share these information". Coordination officer

"See now when we talk about partners, it's a different aspect, because we are not obligated to share each and every detail with our other partners, and as much as we are obligated to share these details with UNICEF." Project manager

- **Employee motivation**

There is lack of employee motivation due to lack of full engagement and job lose, which led to high staff turnover as well as barrier to IS. Therefore, employee turnover is a major challenge to such organizations as quoted below.

*"…we have this much of work turnover sometimes it happens because NGO doesn't have constant work and everyone lose their job so yeah sometimes people resigned just because they find better job like governmental job …I mean myself I am looking such as this job, and even here …lack information on that particular area…".*Coordination officer

- **Structure of the organization**

Some organizations lack proper mechanisms to ensure effective documentation on cases reached and IS in order to avoid duplication of efforts. Others lack structures that facilitate information sharing internally as well as externally since direct information exchange among relevant personnel is not allowed and not all information is open for sharing such as what is considered sensitive and biased service delivery as stated below.

"Yes, but as me directly no coordination I receive list from Ahead of Coordination or project manager…. there is sometimes people assist the same service from different NGO's

…so another household didn't receive any thing … Maybe because the NGO's don't follow the right procedures …". Program manager**.**

"*…maybe the sensitive data like the M&E department is not supposed to share with me. In that case lack information on that particular area..."* Logistics manager

- **Competiveness between organizations**

Some organizations will deny their partners some information since they consider them as competitors, especially with information related to donor funding as stated below.

"Maybe I don't want to show my partner who is a competitor that I have got this, this funds from new donors, because I don't want them to contact these donors for the same." Project manager

Technical barriers

- **Technology and overall information system**

It was established that lack of server, USB data back, flash memory, and recovery systems were important resources that some of the organizations lacked to ensure secure data storage and quality IS as stated below:

"… sometimes for example we need a place where we can store this huge amount of information other than my desktop … because really need the server this is what we are being asking for long time … the server I can do back up for my data base, data base it's most important thing because this data base we put everything even the type of assistance we give in the data we give this assistance so this for example anything happen to this data base we lose it". Field officer

- **Manual Supply chain**

This case found that the supply chain is made complex by the need for assessment process and mapping of cases prior to distribution of supplies as confirmed by the following response:

> *"Not really because sometimes you have to do the assessment for the .....Children are number .... Sometimes they go to visit them because we have their location on the system .....But lately we didn't face this problem that much actually because we do the assessment and we start immediately and manually to give the assistant ...".*logistics manager

Quality barriers

- **Relevance of information**

The content of information, objectivity, the time taken during sharing, and accuracy are crucial elements that must be met to ensure effective IS. This is confirmed by the following quotes:

> *"I feel information has to be diverse, even if we are working with education, it's not necessary that all success story has to be about education. Maybe through education somebody got a scholarship and went abroad, and became like a big doctor. Changing the life of that person can be another success story. Maybe because of education that some girl received in our centre, she managed to escape child marriage by convincing her family I don't want to get married...So information is so diverse. For me it's not simply information, but the content of the information".* Project manager
>
> *"The quality, I mean the time to share information, the time. My organization and your organization, there is a delay. You need information at a certain time, and this delay or the information is not as you would, not delivered."* Logistics manager
>
> *"Yeah the completeness of the information is definitely an issue, but that is an*

individual initiative. You have to make sure that you are looking at all kinds of data to arrive at a conclusion." Coordination officer

"…uncertainty in your reporting. Say someone was monitoring an evaluation can say all 500 volunteers received their payment. But maybe only 400 received them…So I feel sometimes information is not exactly correctly represented". Project manager

Socio-cultural and religious barriers

- **Culture**

Culturally sensitive issues such as gender-based violence is a major barrier to sharing information since people shy away from discussing such issues in public. These impacts heavily on response actions such as communication based interventions because they achieve poor outcomes as noted below.

"...sometimes you know, we have some gender based violence issue so, because it is a culturally sensitive topic, and you know for a lot of people here it is natural to get beaten up by the husband. We are not going to talk about it. So, culture barrier is a very, very big barrier to providing effective communication." Field officer

"…communication it is a very dicey situation when you are in a culturally complex environment. Because sometimes you know there is injustice happening, but you need to inform the larger society about it, knowing that the society doesn't care much. So, cultural issues, cultural barriers are my biggest challenge." Program manager

- **Corruption**

The issue of corruption was cited as another barrier to sharing information process. However, this case did not provide adequate evidence regarding the specific ways in which it affects the process as quoted below.

> *"…there are issues of corruption. I'm sure that can become a barrier to good information of sharing."* Logistics manager

Language barrier

- **Communication barrier**

Language barrier during communication was also identified by the current study. For instance, it was indicated that much is lost during translation process from one language to another. This is confirmed by the following response:

> *"The language barrier, a lot of things get lost in translation. For me, my biggest handicap has to be not to be able to speak in Arabic, because I am sure I could do much more to capture the essence of some things more than the other. But language is a huge barrier."* Field officer

<u>Actions to bridge the barriers</u>

Among the response actions to IS barriers were the Syrian refugees portal website, face to face meetings, official emails and organization reports as supported by the following quote and as in table (6-6).

> *"There are many actions to do for instance, my NGO paper documents it is a report to put in the portal website for Syrian response, and then there are field visits to communicate with other partner and with refuges as well, also there is a meeting, there is this database that everybody connects, there are emails. A new Task Force for example is very useful*

mechanism is that every month we visit physically you can say different partners. We see what they are doing, what their educational capabilities are. So, that's very useful. Those are all official.and. You know their partner faces, you know their phone numbers, and you can just go up to anyone, and be like". Program manager

Table (6-6): Emerging Themes (Case study 5)

<table>
<tr><td colspan="4">Main Themes</td></tr>
<tr><td>Managerial barriers</td><td>Technical barriers</td><td>Organizational barriers</td><td>Other barriers</td></tr>
<tr><td colspan="4">Emerging Themes (Key Quotations in the text mentioned above)</td></tr>
<tr><td rowspan="4">A- Lack Skills and capacity building</td><td>Technology and overall information system that include
A-quality of information (relevant and timely information)</td><td>A-Competition between organizations

B-Power</td><td rowspan="4">A-Culture

B-Corruption

C-Language barrier (Communication barrier)</td></tr>
<tr><td>B-information compilation</td><td>C-Employee motivation</td></tr>
<tr><td rowspan="2">C-Lack of IT system.
D-Manual supply chain.</td><td>D-Availability and accessibility</td></tr>
<tr><td>E-structure of the organization.</td></tr>
<tr><td colspan="4">Organization Actions to bridge the information sharing barriers</td></tr>
<tr><td colspan="4">A- Face to face Meetings with partners.
B- Contribution at the Syrian refuges portal website data base.
C- Organizations reports monthly or quarterly, or annually).
D-Official emails</td></tr>
</table>

6.5 Local Organizations (NGOs)

Eleven interviews were conducted in three local organizations based which the cases findings with the main themes are explained in the following sections.

6.5.1 Case Study Six

Supply chain management

The first local organization revealed that the refugees were provided with health care services. The interviewees described SCM concepts as logistics activities and their managements such information coordination and collaboration as supported by the following quote.

> "…*the process of supply the refugees demand starts from identified the needs and the gaps and what's most important to do because we are implementing this kind problems according to the needs and priorities. Well we collaborate with a program manager for each project also, we have manager in the field and in the headquarter , field and project managers travels to the field and according to the program need we identified these gaps and needs from the field of course we make a plan for each program a program plan this present to the donor there is like a procurement needs to provide certain service , certain Items like if we need to have services for material or medications it's identified In the program plan with the donor when it's approved we have a meeting with a program to Identify this and make a procurement and supply departments …. Which they have a sheet then they can start making the request sign it from different departments from finance program from president according our by law and then he starts like tendering or procurement these ones then warehouse preliminary to distribute to the beneficiaries … ".*
>
> Logistics manager

Findings showed that the humanitarian SCM was beneficial since it promoted effective response and saved time and cost, delivery of high quality service, transparency, and better IS and coordination among SC members. This is explained in the following quote.

"Yes, with the functions of SCM, my work will be effective, Well discipline of this process has allowed us to practice.... let's say high level of integrity and dealing with our donors, transparency in dealing with our suppliers also it has so far allowed us to maintain regular inventory ... which is really important and we maintain our warehouses intact by disposing expired or there is approaching expired date appropriately, when you have a good supply chain managements in an organization all the departments connected to each other so let's say for example that you have two different programs ongoing in two different places and there is like similar needs between those ... so if program A needs 100 and program B needs 200 lets then you make one request for 200 and then you split it between those 2 so there is this kind of coordination in making the work more efficient than letting for example program A people procure by them self and program B people procure by themselves as well then you will not be and also we can coordinate with other organizations ... it won't be cost effective so its cost effective, it's time effective it saves lots of time and the quality of service provided will be higher means that all programs or all departments that needs mutual needs that have mutual needs when have mutual services provided so they won't be any discriminations or differences between different departments and each part of the organization would be following the same standards and the same procedures for any supply that they need ......So SCM its perfect".
Program manager

- **Coordination**

All interviewees agreed that coordination activity in SCM is very important and fundamental in the supply process. They also identified coordination inside their organization and coordination with other humanitarian organization as quoted below.

> *"I believe that the coordination function is very important and fundamental in SCM, Of course it's team achievement. Here we are in close always like the head of the balance operation programs, HR, and finance in very close coordination with them because every project is affected by the finance by the staff and the programs and the operation so we are in very close coordination , sometimes on daily bases we have a meetings sometimes in 2 days for example I am like in coordination daily bases with project managers that's implementing the projects in the field because of their needs and the situation and satisfaction of the service this is inside my NGOS".* Program manager

> "*Okay now the cascade of this process proceeds at this first program people regularly attend monthly coordination meetings, sector coordination meetings with other NGO's in order to understand who is doing what and doing get where so that our programs with compliments to the currently ongoing humanitarian in Jordan it's useless to propose for program that already exist or programs that would not benefit anyone so this the kind of organization as implemented at the sector level with other NGO's but we reflect this in our organization when a member representative attend those meetings reflects the feedback or the mints of the such meeting with programs manger or project manager ,the project manager knows where are the gaps in implementation process or knows what kind of*

*benefits that would be added by adding additional service so the coordination process starts with the programming unit ,this is externally with other NGOs ".*Field officer

- **Information sharing (concept & effect on horizontal coordination)**

IS was identified as a crucial element for coordination in SCM and the process involved exchange of the information between members and it is the main mechanism for sharing information with other NGOs although it was very limited. This is confirmed by the following quote.

"*Okay…..now IS is to exchange the information for an effective response ,it is very important for coordination inside my NGOs and with other NGOs as well , in my NGO we have 3 levels of information sharing .first , levels there is a concept of sharing knowledge. second sharing guide lines, and finally sharing details of benefiters the last one is a red line that we can't cross details on benefiters is something of high confidentiality we would never share any piece of information related to a beneficiary details with other NGO….,The Knowledge or let's say or sharing guide lines we have sector guide lines and we have adapted NGO guide lines now ,there is no kind of like sharing this kind of data except in sector level meeting yes if there is like this our mandate this is the sector level meeting and if there is a need to share the information sector level yes … but randomly for any other donor that working… because sharing data in the sector level means like better performance and better opportunities and better distributional services for example and we are on the same round table and the same field …now because I am not quite sure that you would understand this but we say sector guide line like for example the guide lines for providing ………now this is once those guide lines are finalize at the sector level these guide lines has to be shared with everyone it has to be shared with those implementing in the field ".*Program manager

- **Methods of information sharing**

The interviewees mentioned several methods used to share the demand information such as meetings, formal letters, emails and reports as quoted below.

> "*Regardless .... By e-mail they have facilities to print out and store .... It will be shared with technical staff working in the field to be shared with program people by document letters it would be shared with anyone who require such data for and you know this person would utilize this data appropriately now guide lines once approved by sectors are shared it's something like a report on monthly bases sometimes in quarterly bases and sometimes in 6 months or meetings as well .but we share demand information with our donors ,because we believe that sharing information with our donors is most thing to make like capability for us yes you have to be clear and with donor and share him with all information this is your trust and crudity with donors even if it's like bad news or bad figures or what so ever because we believe that our working with the donors a partnership it's not like I am just implementing partner it's a partnership work so I have to report to them and to also to overcome anything that maybe happened or overcome from this ..... ".*Coordination officer

Managerial barriers

- **Lack of trust**

Trust may be compromised at individual level when acting in the capacity of an employee due to organizational influence. This implies interpersonal trust may not apply when handling organizational issues and therefore limits IS as noted below.

> *"I will tell you something, I trust you as a person, but you present a side of the NGO. Okay, I trust you because of some kind of trust thing. But if you leave, and this is rare,*

there is deliberations, there is something called confidence building measures." Program manager

- **Lack of donor confidence**

Young NGOs and first-time implementers face challenges in winning donor confidence prior to funding award regardless of their skills. As result, such NGOs are compelled to go an extra mile, including meetings and holding extra talks in order to convince the donor as stated below.

> *"It's just understand that Jordan health aid is like local or national NGO sometimes they doesn't our capacity of implementing really to understand that our society have the capacity and to implementation it was faces us before that the other donor did not expect that Jordan health aid have the capacity and the professional staff to implement such project, certain project for example it was a big challenge for us to make them believe that we are fortunate …".* Project manager
>
> *"…sometimes a new organization or a new donor doesn't like understand our nature of work for example this one ….sometimes it happens okay …. So we tell them like our guide lines our nature of work and how we sometimes and we meet sometimes to know like those…".* Program manager

Organizational barriers

- **Structure of the organization**

Some organizations lack mechanisms to ensure adequate coordination and IS, which leads to uncoordinated service delivery and duplication of efforts as noted below.

> *"There is sometimes no coordination and sometimes like some organization provide the same service for the same benefiters…This what we discuss in our workshop sometimes*

there is like some organization provide sometimes input assistance for the same family two times for example. but this why the UNCHR for example established like group meeting for each sector ….to join and set down in around table to coordinate with each other to avoid duplication services". Coordination officer

*"…there is sometimes NGO comes and provide some food assistant or cash assistant …… without coordination for work program but providing food and cash assistant for like refugees it happens but for camp this coordination is tight and working well so no duplication of service if each NGO's how to deal with it if he has like complicated like case…".*Project manager

"Yes coordination is very necessary between implementing partners and donors to avoid the duplications we were discussing that there is no coordination sometimes in the field in the governor between governor and NGO's for examples so they have like a lot of NGO's focusing on implementing the same services in same area where has lots of area was not having no services". Program manager

- **Competiveness between organizations**

Analysis of data showed that not all types of information is shared among the organizations. For instance, financial information is kept confidential for fear of competition or lack of accountability and therefore cannot be shared as stated below.

> *"It depends on what kind of information you're talking about. What kind of information are you talking about? If it's financial information, then of course each organization will have its own secure, but if you're talking about, if you want to work in the field, you have to share."* Logistics manager

- **Insufficient information sharing resources**

Interagency IS was minimal other than through sectorial meetings and random sharing to enhance performance. This is confirmed by the following response:

> *"No there is no kind of like sharing this kind of data except in sector level meeting yes this is the sector level meeting and if there is a need to share the information sector level yes … but randomly for any other donor that working… because sharing data in the sector level means like better performance and better opportunities and better distributional services for example and we are on the same round table and the same field"* .Project manager

- **Power**

There is a misconception among some agencies that keeping information makes them more powerful than others as it enables them to get more donors. Surprisingly, the same NGOs expect to be served with information from other NGOs, suggesting that they are opportunistic. This is confirmed by the following quotes:

> *"Well sometimes, people think information, keeping them in power, so having it means this is happened in the beginning of Syrian process, uh, each Jordanian NGO would have like 200 names of beneficiaries, and they refused to share with other NGO's because they thought that they are, if they have this, they can get more donations from other NGOs."* Logistics manager
>
> *"…they do not share. But, what they did is, the Syrian's would go to this, and that and that. I discovered this, I distribute some kind of distribution, in-kind distribution in Amman, and then after two days I did it in Nagar, the same guy who came to Amman also came to Nagar, I said sir I know you came to one and the same name, so people tend to, Syrian's would register with all of them, and people thought they did not want to share the list of beneficiaries, except for because they can get more donations, more funding for them".* Project manager

- **Staff motivation**

Due to lack of motivation of staff in some organizations, employees tend to quit their jobs in preference for better paying jobs or other rewards and job consistencies. This trend impacts heavily on IS since the organizations end up lacking the relevant capacity to share information.

> *"The turnover is existed but it's like for me it's acceptable in terms of number or percentage this is not high okay its acceptable but each staff want to improve his self he want to go to better opportunity, better experience more experience different experience we find it's acceptable in this kind of term for we my department there was not high turnover really in my department it was mostly very stable specially with the key persons in that aspects"* Program manger

- **Accessibility and availability**

It was found that some information such beneficiaries names and the related information is protected by law against sharing, especially to outsiders. This explains why IS was limited to some extent as stated below:

> *"It's not for public, it's for private, because this is the laws, you never share the names of beneficiaries with outside vendors."* Field officer

> *"Yeah, some of the information that is given to you by other organizations which you signed with them a contractual debt to keep secrecy the names of the beneficiaries and then you can ask me for the beneficiary names in this area, so you know, I can't tell you that, because the source came to me and they requested that this information not to be shared, so I cannot share it."* Coordination officer

Technical barrier

- **Technology and overall information system**

This study established that some agencies had slow servers, lacked databases and internet connectivity or coverage, faced challenges related to new system implementation, need for time and funds to update the system, and lacked of donor support do affect the overall IS in the humanitarian sector as stated below.

> *"We did find some challenges with another organization, when your servers are down, sometimes the database is lacking something, accessibility to certain information, yes we did find this, but after meetings, of course meetings, and things like that, we've overcome it, hopefully. Sometimes even when we do an AE test, or we do case photo, but we have these tablets and we send this new items that we send out to UNHCR or to other organizations, we have some problems, but then we improve them and we overcome".*
> Coordination officer
>
> *"…sometimes the implementation of these system it takes time because you want to implement this kind of these system the system is new and like any other software when you committed sometimes you have to have the time to train and implement the system and sometimes there…there is you will find that there is some kind of gaps and need to develop and added to the services and of course you have to implement these kind of software implemented In the field during like and you can't during the work so you can't stop the work and say that I want to implement this … and have to take kind of people and staff".*
> Field officer
>
> *"…donors does not must focus on information technology to support their decision of also and to make them give them a quick view and also strategic view when and how to implement their subject plane…"* Coordination officer

- **Manual Supply chain**

Various issues associated with SC were mentioned by participants which collectively function together to limit IS. These include the lack of routine activities, lack of harmonized guidelines along the SC and managing individual staff, among others as stated below.

> *"For the system we have like guide lines we have guide lines we have warehouse guide lines we have pharmacy guide line we make this guide lines to make the thing like if you don't know to the book for examples, but every manger does not like found this case is odd and need some advice how to overcome or solve it he comes to me…".*coordination officer

> *"Yes effective of course effective but it's not routine and manual ,that you have to come through the office in daily bases to do one two three four five for example the most difficult sometimes is like to manage people to manage staff sometimes to manage cases easier than to manage staff because every staff like you have to deal with them in different manner, there are not all in the same manner you can deal with them so management for me I think for me the most challenging thing is how to give view to the staff even the smallest to the manger yes you have to be small like with small staff and you have to be big with manger for me this is my philosophy …"*Logistics manager

Quality barrier

- **Untimely information sharing**

The case showed that sharing information among organizations sometimes faced delays, and eventually affected the overall program implementation as noted below.

> "*Yea, we have some delays sometimes, which affect the implementation of the program. Yea, of course we have delays. We have the human factor, sometimes you are overwhelmed, they don't have, you know…"* Coordination officer

<u>Actions to bridge the barriers</u>

The interviewees indicated that relevant demand information was shared through the Syrian refugees' portal website, meetings in the health sector group, emails, regular reports and share information with other NGOs if they requested. The aim was to overcome the mentioned barriers as confirmed by the following quotation and as in table (6-7).

> *“ of course ,although we are a local NGO but we are an effective NGO in Syrian crisis response and our organization looks to do more ,So we try to do the best in order to share information inside my NGO and with other partners ,for instance, the Syrian refugees portal websites one strategy to share the information through put the regular reports .also regular meetings and sometimes emails. All these are actions to help the process of information sharing”.* Logistics manager

Table (6-7): Emerging Themes (Case study 6)

<table>
<tr><td colspan="4">Main Themes</td></tr>
<tr><td>Managerial barriers</td><td>Technical barriers</td><td>Organizational barriers</td><td>Others barriers.</td></tr>
<tr><td colspan="4">Emerging Themes (Key Quotations in the text mentioned above)</td></tr>
<tr><td>A- lack of trust</td><td rowspan="6">lack of donor support do affect:-
A-lack of databases and information compilation

B- lack of harmonized guidelines along the supply chain, and managing individual staff (Manual supply chain)

C-lack of internet connectivity or coverage effect on the quality of information (relevant and timely information</td><td>A-Competition between organizations</td><td rowspan="6">A-Quality barrier (Untimely information sharing)</td></tr>
<tr><td rowspan="5">B-Lack of donor confidence</td><td>B-Insufficient resources to share information</td></tr>
<tr><td>C-Availability &Accessibility of information</td></tr>
<tr><td>D-Staff motivation</td></tr>
<tr><td>E-power</td></tr>
<tr><td>F-Structure of the organization</td></tr>
<tr><td colspan="4">Organization Actions to bridge the information sharing barriers</td></tr>
<tr><td colspan="4">A- Sharing information with others if they asked.
B- Portal website data base.
C- Organizations reports monthly or quarterly, or annually).
D- Meeting.</td></tr>
</table>

6.5.2 Case Study Seven

Supply chain management

This study showed that local organizations provided wash services to refugees in communities and camps or vulnerable Jordanian people. The interviewees also clarified the SCM concepts as logistics activities. This is supported by the following quote.

> *"So we starting from the assessment actually. We decide what kind of needs the beneficiary they need in the community and camps. Then we design what the fit for these community and camps to give for them. After this we starting off to take approval. After the approval, we starting tenders so after we did the [tenders] we starting to do the procurement. We should bring three offers from the suppliers. So, this is a procedure we should do it. After this we have our warehouses all of these things and then we can have distributed to the beneficiaries ".* Logistics manager

It was established that misconception about humanitarian organization arise along the SC such as during communication with suppliers, which lead to difficulties in procurement or service delivery as confirmed below:

> *"Yes, sure we have challenges and obstacles …. From the field and from supplier we are dealing with sometimes supplier you are dealing with they didn't understand the full concept of humanitarian organization and this type of miss understanding or let's not understanding the humanitarian field will caused for us difficulty procuring or delivering our services".* Program manager

From the interviewees perspectives, the benefits of SCM in the humanitarian response were effective response, clear stages in their work, and cost-effective in terms of time and cost, high quality of service, transparency between different departments in the organization and better IS and coordination across the SC. This is explained in the following quote:

> *"Actually, the benefit is you're reaching our beneficiaries demands, needs. Just you are closing the gaps of the in the communities and camps because the government couldn't do all of these things alone. Because if we are thinking is the NGOs are existing because they can't close some gaps. They couldn't do everything like a government. Yes, because these process (SCM activities) will make the things clear and you have a clear as a manager this is information for you. So, it's affective. effective because each one of us know what to do in different stages. So, I'm starting from this stage and my colleague in the procurement department they take and handle the second stage. So, this is make the things easier. You have all the information you need and there is some colleagues supporting and coordinate. And save times".* Project manager

- **Coordination**

All interviewees emphasized that coordination activity in SCM is very important and a basic activity in the supply process. In addition, they explained two types of coordination: coordination of demand information inside their NGO and between all departments and with other humanitarian organization as quoted below.

> "*In my NGO (inside) it's easier because in my NGO you have different tools to do the coordination. Starting from your staff and the others stakeholders you are working on but actually each project we have a different stakeholder so I think so the coordination starting*

from this point because if you have a god coordination with all parties and all of them informed about what you are doing and you have a plan each one from the beginning has a clear idea about what we will doing so all the things it will be easy for you in different stages. So the coordination starting as I told you from all staff we are looking what kind of coordination we need. From different department. Outside my NGO, It's really hard. Is really important actually and you need to know everything's in the field, what other organization do, in the high level in the different. That's mean if you did this you have a good response, you will have a good implementation in the field. coordination with humanitarian organization important, yeah and actually maybe you need also to remind the people about your plan, your timeline of the plan, how much this respond is important for you like this". Coordination officer

- **Information sharing (concept & effect on horizontal coordination)**

It was found that all the interviewees indicated that it was relevant to share information among different departments in the organizations and between other related partners. They emphasized the importance of IS for successful humanitarian response and coordination in SCM. However, there was limited information sharing with other NGOs as confirmed by the following quote:

> "*This is something really important. Information sharing that's mean anyone have a knowledge and experience should have to give it for others and don't keep it for yourself. And it's important to share the relevant information if we need"* .Coordination officer

"…this is will not be good. If you would like to success this is the way to success because the managers if they just hold their knowledge and experience for themselves and they got out from the place they are working on believe me they will felt and this felt will going with you even if you left your work. Actually, the success if you left to share and if you left your work and the success is continuing this is your success. So we have this problem actually. We have it yeah…Yeah because some organization they will don't like to give you their experience and knowledge and they prefer always to get your ". Logistics manager

- **Methods of information sharing**

Additionally, interviewees explained many methods to share the demand information such as meetings, negotiation formal letters, and emails as quoted below

"Yap …. We can share by e-mail which is very easy for every one or by negotiation with the high level of donors to get you know to get the grants or something like this and the different level of management in the field and other organization, meetings also. And formal letters when we need it". Project manager

Managerial barriers

- **Skills and capacity building**

This study found that Some organizations lacked relevant capacity to match the changing technologies in order to facilitate IS. Besides, getting the employees with relevant skills and capacity poses a challenge. This calls for continuous training in order to address the gap as noted below.

“Now this can be a challenge as well…specifically in the beginning, it happens to me when I started working here because I was used to a specific system and now here a way more different it’s complicated it’s advanced system so I have had to understand each system or each sub system alone and then connect all these …. So you have numbers, you have to have skills in formulas from my point because there has to be some kind of formulas or equations for the people who work in the field they have to have computer skills …” Program manager

*“This is what we are trying to do now with these new technologies and hardly you can find people in the field and good in technology or bringing those together but this I want you to be share information but with my rights saved and to make it like okay this an easy process and do it happy … ”*Project manager

“Of course building in the human resources it needs building all the time we believe that have in the HR in my NGO we have a unit for training for the internal training the capacity building of internal staff with the assessment they did the assessment buy we need to enhance capacity building …" .Coordination officer

Organizational barriers

- **Structure of the organization**

The interviewees indicated the issue of inadequate interagency coordination largely due to lack of structures to facilitate the process as noted below.

“So you can say there is limited horizontal coordination as I mentioned (external) ...but inside this NGO and clinics in the field yes ...” Coordination officer

- **Power**

The issue of power emerged with regard to the existing IS. For instance, it was found that data manager may share information internally but not externally. This is confirmed by the following responses:

> *"I have all the data on excel sheet on mine desktop then I go back to the requesting month and I got the number and I provide this number to the person who was asking about this internally …now externally I can't share information because of the level of my position I can't share…".* Coordination officer
>
> *"With other partners no , but even if I received an e-mail of a question about any information I refer this to the responsible person who have the authority to answer… yes I don't have the authority to answer people outside…".*Logistics manager

- **Accessibility and availability**

This study found every information type is shared even with the donor since the process is guided by terms of agreement. For instance, any information considered private is not shared externally as stated below.

> *"Yes, you can't give all the information that you have to everyone, now if certain donor is asking now there is a relationship, there is an agreement between us very early from the initiation of the service there is an agreement about what level of shared information would be giving"*. Project manager
>
> *"…anything to be shared externally has to follow a procedure of approvals so it won't be my decision nor senior management its top management approval…."*Logistics manager

- **Competiveness between organizations**

The findings showed that some organizations are unable to secure donor funding to support IS and overall programming due to stiff competition they face from stable organizations and biasness in funding based on geographical origin of the organization. This is confirmed by the following responses:

> *"Yea it's depending on the funding criteria for big chance for we can go but for the big millions because all organization have a high competitive for the fund so don't like to share it is it should be a strong NGO leading so it's and for the big NGO's like in Jordan scoped …. Now we are limited NGO's who can do the big work it's the big good work and spread over Jordan so when was a big tender these international NGO go to all of us and make in a hard position and it's a hard position for let's say for this NGO…"* .Project manager
>
> *"…now we are building the trust between us and the government but the funding from outside its more to the international NGO and we find the last four years it was the hardest in raising funds for our projects in corporation internally this an important reason because of high competition between international and local NGOs for the fund…".* Program manager

Technical barriers

- **Technology and overall information system**

This study identified various issues regarding technology, including lack of internet connectivity which resulted in communication breakdown, difficult information management process such as accessing relevant information in the system timely, lack of donor support in building the system and lack of adequate time for documenting data. The overall effect is lack or limited IS as quoted below

> *"…the system is in place for reporting but you can have a challenge for example of cut of internet connection for example , and this report has to be submitted on Sunday and on*

*Sunday there was the for a certain there was no internet connection on the clinic and they were an able to send this report so …"*Field officer

"Till now the information management process is very hard and we are in the process even it's because it's because it's build with NGO it is more related to people so whenever people are meeting we find it hard to find these information …Even it's if like this is the *handover meeting I left I hand over the information it's hard to find it because people don't want to search they want it easy to find the information system so even if it is handed over it is not the proper way of handing it over"* Coordination officer

"…we do a CRM which is like centralize information system everybody will feed in his information and put in so this from now on but the old information all we are putting it in but it's not established and it's something related when you work with NGO with people *it's not only information it has mind and hard so you can get the information but not the hard …..So how it was established here you can get the information up this project was established because this but not the actual why it was…"*Project manager

"…there is problem with technology because we are like the other NGO's we are like implementers we are too much into the field we are too much into people and taking less time into technology and documentations and these things sometimes you can find it these documentations but how its these all knowledge and information system are there building all my NGO information together…" Coordination officer

- **Manual Supply chain**

The results showed that some organizations were using manual information sharing system which limited performance across the supply chain as confirmed below.

"No, unless he is working with annually old paper work process which not this is the admin part, you can take to the admin for me it's the project it's like okay we need to purchase tools and machines for this food processing for the color we have the cold storage which is with one and half million JD it's the cost …". Logistics manager

Financial barrier

- **Insufficient funding for monitoring and evaluation**

Although project monitoring and evaluation is done at every implementation stage, some organizations face challenges with inadequate funds to ensure a successful process. Other areas of funding need include staff training. However, the donors are yet to give these needs the required attention as confirmed by the following responses:

> *"…We have the monitoring and evaluation in each step that will be things that is resources that we can build on later on it is of course if we work it out less if it will be spent less money as specially because we don't have enough funding for us we seek funds for each project like if we go to this community we need to raise funds for that community for these needs or refer them to government or other NGO's or privet sector to fulfil these things …"*Program manager
>
> *"No, (Funding). it's limited and we try to put certain amount in each proposal we put , like in poverty pocket we put okay this is limited we need to train the staff some donors refuse this because no we come to you because you are already experience so why…"*Project manager

- **Competition from stable organizations**

"*Now we are limited NGO's who can do the big work it's the big good work and spread over Jordan so when was a big tender these international NGO go to all of us and make in a hard position and yes it's a hard position*"Coordination officer

> "…*we find the last four years it was the hardest in raising funds for our projects in corporation internally…"*Project manager

➢ **Opportunism/Exploitation**

Some organizations take advantage of collaboration with less established organizations and use their resources, including staff development and training. This limits the less stable organizations from sharing information since they lack ownership as noted below:

> *"…we have very good excellent corporation with international NGO's till the Syrian crises started now the money is big there and they are working alone and not working with local NGO's because it's easier it's cheaper for them to get all the funds* and have their own *staff now even the challenge with corporation they know their staff and they take our staff and they hire sailors form them".* Project manager
>
> *"…… in other NGO's that is well established in Jordan before and it's well recognized till now they are working with the people they know that the local NGO's are the key in the communities so they work with us on the mobilization of community starting the program this is part of our challenges…"*Coordination officer

<u>Actions to bridge the barriers</u>

Similar to other case, this case study shared information through the reports which are put at Syrian refugees' portal website, and sector meetings beside the emails as mechanisms of overcoming barriers to IS. This is supported by the quote below and summarized in table (6-8).

"Yes, all organization that are concerned in the Syrian refuges crisis must take actions to enhance information sharing for a quick and better response. I believe this is very important. but what we do now. My NGO share the demand information through the reports we put in the Syrian refugee's portal website and the meetings organized by the sectors as well as the emails, or for any NGO if the requested ". Program manager.

Table (6-8): Emerging Themes (Case study 7)

Main Themes			
Managerial barriers	Technical barriers	Organizational barriers	Financial barriers
Emerging Themes (Key Quotations in the text mentioned above)			
A-lack of Skills and capacity building	Technology and overall information system. A-quality of information (relevant and timely information)	A-competition between organizations	Insufficient funding for monitoring and evaluation A-Insufficient resources B-Poor investment in IT system. C-Poor organization infrastructure D-Poor training of staff. F-Opportunism/ Exploitation
	B-information compilation	B-Structure of the organization	
	C-lack of internet connectivity which resulted in communication breakdown. D- Manual Supply chain	C-Availability &Accessibility of information	
		D-Power	
Organization Actions to bridge the information sharing barriers			
A- Sharing information with others if they asked. **B-** Portal website data base. **C-** Organizations reports monthly or quarterly, or annually). **D-** Meeting.			

6.5.3 Case Study Eight

Supply chain management

This study found that the services provided to the refugees were mainly food and wash services and shelter. The interviewees indicated that the SCM entailed assessment of the demand, planning, sourcing, delivering, and transferring the materials to the beneficiaries. This is supported by the following quote.

> "*SCM for me is comprised of planning, sourcing, delivering, and transferring As for planning I get the demand from the project manager and after that I do my sourcing strategy. For example: the programme manager needs 1000 tons of rice, we start looking in the market for the best quality and price for this product and this is done through tendering process (local, Regional and International) and then through competition, we sign the contract, followed by logistic delivery and then distribution by programme team. Delivery transportation depend on the value of money, i.e. which is cheaper".* Logistics manager

All the interviewees suggested that the SCM was beneficial to humanitarian response since it facilitates timely response and increased efficiency, cost efficiency and effectiveness (delivery of quality services to achieve a desirable output with small amount of money) and save refugees lives. This is explained in the following quote.

> ***"****The main tasks for SCM in our organization are very important strengthen local economy, save refugees lives through effective response and effective work process. Each department and employee have a cretin task to do it in an efficient and effective way through SC tasks we have a clear management and information flow between others. I believe SCM tasks facilitate coordination through the sharing of information"*. Project manager

- **Coordination**

The interviewees demonstrated their knowledge about coordination activity in SCM as a mechanism to increase communications inside and outside the organizations and to ensure timely response as a team work. This would be internal or external coordination as quotes below.

> *"Coordination for me means an increase in communications, increased collaboration, efficient and timely response as a team and save time and work. No duplication of tasks or interventions or overlapping and saving resources or good using. We apply coordination through regular weekly system between different units in my NGO through hoc meetings and regular coordination meetings and have monthly meetings with different organizations (UN and International organizations). but this coordination (externally) sometimes could be a challenge time for follow up action, people going and coming (changing staff), turn over problem. people in these organization say yes we like to coordinate and share information ,but in fact there are a lack in the coordination and information sharing plat form".* Program manager

- **Information sharing (concept & effect on horizontal coordination)**

Interviewees in this case showed that IS means to exchange the required information among all interested parties inside in the organizations and between other organizations for the purpose to improve humanitarian response. They also highlighted the importance of IS for the success of humanitarian response .IS and coordination are interlinked in SCM and they mentioned that the IS with other NGOs was very limited. This is confirmed as below.

> *"Information sharing it is a must and very important, you cannot continue your work without information sharing and relevance and a timely, accuracy and frequency (every day and week and so on) and the type of information internally and externally and you*

cannot take decisions without information sharing. Information sharing and coordination are interlinked .First, information sharing (only), in time of crises, information sharing comes first then comes coordination. Second, coordination: working together if you first share information. In general. Unfortunately, there is limited information sharing between humanitarian organizations". Coordination officer

- **Methods of information sharing**

Furthermore, the interviewees explained many methods to share the refuges demand information such as meetings, reports and emails to keep everybody in the loop as quoted below

"Yah sure …. Internally we share with my college the all the information they need for a quick response of my NGO. of course, by e-mails, meetings, letters it's easy we share information with donors by reports and with other partners such as NGOssometimes with meetings and reports through the Syrian information sharing portal…". Program manager

Managerial barriers

- **Skills and capacity building**

The results showed that while training and capacity building is a need that humanitarian sector cannot avoid, some organizations make the situation worse since they lack human resource development plan and therefore only a few individuals are considered for training opportunities unlike others. This is confirmed by the following responses:

"Yeah because this is something that should be systematic work, he got communication skills. He got PM (project manager) he got leadership. What kind of demand he need according his duties to build it". Project manager

"Some of people they have six years or ten years' experience but still their positions feel coordinated and they don't get any capacity building they don't get any things. And also our staff they don't know what next... And I'm looking who's the one I should to replace

me in some day. I need this second arm I need this people because if I left there is someone can handle everything's after me. So this is one of the things I'm not satisfied about. There is no clear plan or decisions about the human resource development in our NGOs." Logistics manager

- **Employee recruitment**

It was found that some organizations have lengthy employee engagement process since they took long to recruit and train the employee in order to equip them with necessary skills for their jobs as stated below:

"The challenges in implementations would lately recruitments process because when you have a program there too technical it takes time for us to recruit and train the candidate appropriately and so that they would enter the , enter and work appropriately within the umbrella and maintain this takes an effort from the employees in the field themselves and effort from us as program department… when you have a new recruited personal it takes time for this person to start practicing and delivering the appropriate service to maximum, number needed of the benefiters…" Program manager

Organizational barriers

- **Structure of the organization**

The interviewees indicated that lack of organizational structures limited IS since response by many actors was more likely to be uncoordinated as stated below:

"The challenge sometimes the response…. from different stakeholders. When you like one of the projects we are working on some of ministry's they are working in the project we are working together. Yes we have their own." Coordination officer

- **Insufficient resources for sharing information**

Although some organizations are committed to sharing information with others, it was noted that the some recipient organizations did not reciprocate by sharing information with them. It was also found that the tuition program, being one of the IS channels at country level, is weak due to lack of support. These findings are supported by the following responses:

> *"You ask if other NGOs share also the same their information with you.NO not all of them not all of them share. Some of them they are do not have enough resource to share relevant information"."* Field officer

> *"…even the tuition, national level, and at the government level, is very weak. So, this is affected by the end to the support we are getting as local* NGOs.*"* Project manager

- **Accessibility and availability**

This study found that sharing of information is allowed among the partnering organizations. However, the process is guided by some protocols since some information such as beneficiary details is not allowed to be shared due to ethical requirement of confidentiality. Similarly, pending approval was not shared until approved. However, the privacy issues at internal level did not affect external sharing as supported by the following responses:

> *"…now information sharing it has two levels specially for my NGO because there is a kind of sharing guide lines let's say three levels there is a concept of sharing knowledge, sharing guide lines, and sharing details of benefiters …..this is a red line that we can't cross details on benefiters is something of high confidentiality we would never share any peace of information related to a beneficiary details …"* Program manager

“Three guide line or let’s say the component dimension they combine with both internal and external sharing we don’t share details on benefiters …. Never we don’t share guide line that are pending approval …. With other NGO’s why, because they are pending approval they are not approved yet once guide lines are approved it’s harmless to share”. Coordination officer

“As I mentioned coordination and information sharing go in line together we don’t share personal or detailed information on benefiters otherwise if I , we have guide lines we have some instruction that can be …..By other colleagues working or by other NGO’s yes sure we would share we would help others it’s okay”. Project manager

Technical barriers

- **Technology and overall information system**

Analysis of this case revealed that regular monitoring and maintenance of the system was a major need that limited information sharing to ensure progressive programming. Other outstanding barriers included incomplete implementation of information system, lack of adequate donor support towards system development, lack of commitment and joint response, and use of manual system as quoted below

*“…In fact , information system need regular monitoring and maintenance and this is a challenge but it’s established…But it’s established of course but it is in need to improve…..well as we are expending of course it need improvement and it need working , it need adding other assess but we do that we grow smoothly and we grow slowly so that we would not have tangible gabs because any gaps in information system can’t be retread or verified…”*Coordination officer

"…we have not starting working with data information system except in late 2014 because we had to make sure that our employees can entire appropriate data correct data to the system and our program coordinator can extract the data they need from the program… okay before that we adhere to hard copies files for the patient in the clinics, now we have this kind of computerized system that saves a lot of effort a lot of time and a lot let's a lot of resources". Program manager

"They are never interested in investing in assists, unless they are donors who have identified implementing partner and would like to continue working with the same partner for a long period and now this the situation between this NGO and other donors now…" Program manager

*"…we don't have a computerized system, for example, for sharing. But, we have an archive system for all the documents. So, through the secretary's office, and it was only need for information. She can go and ask to get it from the archive system."*Field officer

- **Bureaucracy**

Despite securing donor funds, the humanitarian organizations are still restricted in their expenditures to terms of agreement and allocation per activity, suggesting that breach of the agreement may amount to termination of contract. However, the restrictions also limit IS process especially where funds are not allocated for information system as in the case with most donor funds. This is confirmed by the following quote:

"…our challenges, sometimes, in implementing some projects comes that some donors, I would say, according to their regulations. They said a certain percentage, for example, the admin cost. While the project tied recovered more". Project manager

- **Manual Supply chain**

This case identified amorphous kind of SC in humanitarian sector which does not facilitate overall response and IS effectively as noted below:

> *"Although, maybe, we don't have a well-organized supply chain, I would say. We have a chain."* Logistics manager

Financial barriers

- **Knowledge and experience sharing among workers**

It was found that some organization lack mechanisms to ensure knowledge and experience transfer as a means of sharing information. As a result, the organizations are faced with challenges when those with relevant experience and knowledge quit for other jobs as confirmed below:

> *"I think knowledge and experience means the success, if you would like to success this is the way to success and funding absolutely helps the success, but the managers if they just hold their knowledge and experience for themselves and they got out from the place they are working on believe me they will felt and this felt will going with you even if you left your work. Actually, the success if you left to share and if you left your work and the success is continuing this is your success. So, we have this problem actually…some organization they will don't like to give you their experience and knowledge and they prefer always to get yours".* Program manager

- **Information Technology (IT)**

Due to lack of funding for information system and associated accessories, some organizations operate with outdated system which impacts adversely on IS as stated below:

> *"Actually, I think my organization (NGO), they are outdated and they try to change all the servers to implement the portal for the communication system with the limited fund that we have. Definitely, there's a problem with financing to this situation."* Coordination officer

Actions to bridge the barriers

Like in other cases, IS was done through reports that were put at Syrian refugees' portal website, sector meetings and emails to ensure that the existing challenges to IS are overcome as quoted below and summarized in table (6-9).

> *"Absolutely, my NGO highly understand the importance of information sharing regarding Syrian refuges crisis, accordingly, our team they attend and share the relevant information in the meetings of sector working group or with emails if they needed and we put our organization reports at Syrian refugees' portal website ...."* Program manager

Table (6-9): Emerging Themes (Case study 8)

<table>
<tr><th colspan="4">Main Themes</th></tr>
<tr><td>Managerial barriers</td><td>Technical barriers</td><td>Organizational barriers</td><td>Financial barriers</td></tr>
<tr><td colspan="4">Emerging Themes (Key Quotations in the text mentioned above)</td></tr>
<tr><td rowspan="4">A-lack of Skills and capacity building

B-Employee recruitment</td><td>Technology and overall information system.
A-quality of information (relevant and timely information)</td><td>A- Structure of the organization</td><td rowspan="4">Insufficient funding for monitoring and evaluation

A-lack mechanisms to ensure knowledge and experience transfer as a means of sharing information.

B-Poor investment in IT system and training of staff</td></tr>
<tr><td>B-information compilation</td><td>B--Availability &Accessibility of information</td></tr>
<tr><td rowspan="2">C-Manual supply chain system

D-Bureaucracy

E -lack of commitment and joint response</td><td>C- Insufficient resources to share information.</td></tr>
<tr><td></td></tr>
<tr><td colspan="4">Organization Actions to bridge the information sharing barriers</td></tr>
<tr><td colspan="4">A- Portal website data base.
B- Organizations reports monthly or quarterly, or annually).
C- Meeting.</td></tr>
</table>

6.6 Conclusion

The overall findings from case one identified managerial, organizational, technical, financial, and socio-cultural and religious barriers to IS. The organizational barrier was the highest frequency (17 codes), then technical and managerial barriers of 6 and 5 codes respectively, while financial and socio-cultural barriers showed the least frequency (1 code each). The overall frequency of codes as per the thematic analysis of respondents' transcripts for all cases is summarized in Appendix (9) . The frequency infraction as in appendix (9) is the ratio between the frequency of codes for each barrier and the total frequency of codes in each case.

Case two identified managerial, organizational and technical barriers to IS. Of these, organizational barrier was the highest frequency (11 codes), then managerial barrier with (8 codes), and technical barrier (7 codes) with least frequency (Appendix 9).

Case three had managerial, organizational, and technical, language, quality, and socio-cultural and religious barriers. Organizational barrier (10 codes) was the highest frequency, then technical barrier (9 codes) and socio-cultural and religious (6 codes) followed by managerial (4 codes), language (2 codes) and quality (1 code) with least frequency (Appendix 9).

Case four was characterized with managerial, organizational, technical and language barriers. The organizational barrier (12 codes) ranked the highest frequency, then managerial (3 codes) and technical (3 codes) and language (1 code) barriers with least frequency (Appendix 9).

There were managerial, organizational, technical, quality, language, and socio-cultural and religious barriers in Case five, of which organizational barrier (8 codes) ranked the highest frequency, then quality barrier (7codes), technical (5 codes) and socio-cultural and religious (3 codes), managerial (1 code) and language (1 code) barriers had the least frequency (Appendix 9).

Case six had managerial, organizational, technical and quality barriers. Organizational barrier (11 codes) ranked the highest frequency, then technical barrier (9 codes) followed by managerial (3 codes) while quality (1 code) barrier had the least frequency (Appendix 9). With regard to case seven, organizational (9 codes) and technical (8 codes) barriers followed each closely on their frequency, then financial (4 codes) and managerial (3 codes) with least frequency followed by opportunistic (2code) barrier (Appendix 9). Case eight found technical barrier (10 codes) with highest frequency, then organizational barrier (7 codes) ,while managerial (3 codes) and financial (2 codes) barriers had the least frequency (Appendix 9). The overall findings showed that organizational barriers were the highest frequency, followed by technical barriers, then management barriers. These were followed with socio-cultural and quality barriers and then financial , language and opportunism barriers respectively. The implication is that humanitarian organizations need to focus most resources on organizational, technical and management related barriers since they are main sources of issues affecting information sharing in HSCM. With these addressed, the other barriers may be easily managed since they are main secondary outcomes of the three key barriers in this study.

CHAPTER 7: FINDINGS FROM CROSS-CASE ANALYSIS AND DISCUSSION

7.1 Introduction

This chapter provides an overview of findings from eight cross-case comparative analyses, which used categories from each case, codes as well as themes to determine the similarities and differences across the cases. The aim was to provide thorough initial case data analysis based on structural plus diverse lenses so as to improve theoretical accuracy and reliability as described by Eisenhardt (1989). The researcher then explained the relationships between themes and subthemes across all the cases and concluded by making comparison and similarities about barrier factor relationships so as to allow valid recommendations and measures to bridge IS barriers across the HSCM in Jordan. Cross-case findings are presented based on frequency of codes for each theme that was identified during TA of each case and how they are related with IS process **(Appendix 9)**.

7.2 Cross-Case analysis

Cross-case analysis identified a total of eight key themes from all the cases. These were technical, organizational, financial, managerial, quality, language, opportunism, and social cultural and religious barriers. Each theme was also categorized into subthemes in order to identify the specific barriers to IS as discussed in the following section.

7.2.1 Key Finding 1: Organizational barriers to information sharing

Organizational barriers emerged as the major limitation to IS during coordination among humanitarian actors particularly in case four (International NGOs) 12 out of 19 codes (Table 7-1).

Table (7-1): Organizational barrier to information sharing

Organizational barrier (Insufficient resources ,Competiveness, Power, Availability and accessibility, Commitment of members, Security of information, Structure of the organization)			
Case number	**Frequency of codes***	**Total frequencies of codes for each case**	**Frequency infraction****
1	17	30	0.57
2	11	26	0.42
3	10	31	0.31
4	12	19	0.63
5	8	25	0.32
6	11	24	0.46
7	9	25	0.36
8	7	22	0.32

*** :**Total number of codes for each barrier in each case of the thematic analysis.

* ***:** The frequency infraction is the ratio between the frequency of codes for each barrier and the total frequency of codes in each case.

Among the cited factors were competiveness between organizations that resulted in withholding information from others SC partners for fear of being competed for donor funding; and limited availability of or accessibility to information due to confidentiality and privacy of personal information. Besides, the governments restricted sharing sensitive information to public security. Furthermore, some organizations lacked sufficient inter-agency coordination which lead to effort duplication due to limited IS on cases reached with supplies. Other contributing factors included lack of HR system and donor support, and delayed information integration in humanitarian response.

Case one (UN agencies) is ranked with the highest frequency of organizational barriers since it had 17 out of codes 30. These included limited access to or availability of information due to confidentiality and privacy of personal information or security issue relating sensitive information to the public security; competiveness between organizations which led to withholding information from other organizations to avoid competition for donor funding; seeking recognition and credibility from the donors; insufficient coordination due to minimal IS ; lack of donor support towards information system or delayed information integration during response to humanitarian needs; and amassing information for power.

Case four (International NGO) came next with high frequency of organizational barriers that accounted for 12 out of 19 codes due to lack of organizational structures, including effective policies to facilitate IS which caused inadequate coordination among actors. Besides, there was limited access to or availability due to confidentiality and privacy issues of personal data or due to lack of protocols to facilitate IS. Other organizations resisted sharing information to gain more power over others. Lack of motivation resulted in high staff turnover for search of better opportunities since relevant skills for knowledge management were lost to other organizations. There was also fear for stiff competition for funding. Table (7-1) below summarizes the findings from each case study based on frequency of codes per theme and their corresponding probabilities.

Case two (UN agencies) also showed high frequency of organizational barrier since it had 11 out of 26 codes and case six (Local NGO) had 11 out of 24 codes due to insufficient coordination at both internal and external level as a result of minimal IS. The situation is compounded by involvement of many actors who make uncoordinated. Other factors are limited accessibility to and availability of information due to inability to identify information type available for sharing, confidentiality and privacy of personal information and security-related issues, and fear of competition for donor funding.

Cases seven and eight (Local NGOs) and case five and three (International NGOs) were approximately similar with regard to frequency of organizational barrier. Case seven had organizational barriers such as lack of power particularly among information personnel to share information. Moreover, there was confidentiality and privacy of personal information;

competitiveness among organizations for donor funding, and inability to secure funding due to geographical biasness among donors. Case five had 8 out of 25 codes due to structures with ineffective policies to facilitate IS and coordination; minimal accessibility to and availability of information due confidentiality, privacy and lack of accountability among partners; lack of policies to empower employees to share monitoring and evaluation information directly with other organizations; staff turnover which led to staff shortage in specific relevant skills and experience of IS; and fear of competition for donor funds.

Case eight had 7 out of 22 codes mainly due to lack of availability of and accessibility to personal information due to privacy and confidentiality issues; lack of structures to facilitate IS process; limited donor funding; and bureaucratic donor regulations of budgetary allocations for funded activities. By contrast, case three had 10 out of 31 codes due to insufficient resources that resulted in low coordination and limited capacity to gather data for sharing; lack of effective policies to facilitate IS process; competiveness among organizations; security issues with regard to sensitive information; and lack of accessibility to and availability of information due to confidentiality and privacy of persona details.

Evidently, organizational barriers had highest frequency among the Cases one and two (UN agencies), four (International NGO) and six (Local NGO) then cases three and five (International NGOs) and cases seven and eight (Local NGOs). The predominant organizational barriers could be attributed to many partners that collaborate with the UN agencies and international NGOs, and the wider geographical area of operations. However, case six (local NGO) lacked efficient organizational structures to facilitate inter-agency IS, lack of adequate workforce due to high turnover, and lack of knowledge sharing among staff members. Cases three and five (International NGO) and seven and eight (local NGOs) which came next due to lack of adequate donor funding that resulted in minimal IS and uncoordinated SC operation, and lack of relevant skills to manage information due to high employee turnover.

7.2.2 Key Finding 2: Technical barriers to information sharing

The results showed that only case eight (Local NGO) had the highest technical barrier frequency with 10 out of 22 codes unlike the rest (Table 7-2).

Table (7-2): Technical barriers to information sharing

Technical barrier (Manual Supply chain, Technology and overall Bureaucracy)			
Case number	**Frequency of codes**	**Total frequencies of codes for each case**	**Frequency infraction**
1	6	30	0.2
2	7	26	0.27
3	9	31	0.29
4	3	19	0.16
5	5	25	0.2
6	9	24	0.38
7	8	25	0.32
8	10	22	0.45

These included technological and overall information system related issues, including the need for monitoring and maintenance of the information system which required regular improvement due to growth of the organization. The use of manual rather than computerized system is not cost-effective to facilitate IS among the actors compared to cases one and two (UN agencies) and case three and five (International NGOs) which had automated systems with enhanced IS at minimal management cost.

Some organizations experienced difficulties in securing donor funding and setting priorities in their operation amidst scarce resources which made it difficult for such implementers to cover their planned activities as expected. This could be explained by lack of strategic management skills and poor policies. By contrast, the UN (Cases one and two) agencies and international NGOs (cases three, four and five) had relatively low financial challenges with no reported cases of priority setting challenges. Delayed response was also common in some organizations due to poor coordination with other SC partners and lack of commitment to IS. Like other cases, donor support towards the information system was not available unless supported by long-term donor. Other issues included strict donor regulation on expenditures and budgetary allocations, and lack of a well-organized SC.

Cases six and seven (Local NGOs) came next due to their corresponding codes of 9 out of 24 and 8 out of 25 respectively. Case six had IT related issues of low server, lack of databases, and lack of adequate time for implementing new information system since it also requires staff training on their use. Besides, lack of adequate expertise to maintain the overall system were very pronounced than in case seven which had automated system. Thus the organizations outsource for technical services at an extra cost despite their financial constraints. The donor support towards the system is not available since it is not a donor priority need. There is also lack of internet connectivity which affected system updates and overall IS, and the dynamic nature of the SC which is associated with new challenges rather than routine practices. By contrast, the case had IT related problems such as lack of internet connectivity that disrupted communication and IS; lack of adequate time for documenting the information and system update due to imbalance in time allocated for fieldwork and information system management; difficulties in extracting information from the system since it is not well-established or due to many actors involved in a centralized system and lack of donor investment in the system which hindered IS. Besides, the SC information was only shared with suppliers that secured annual tenders.

Cases one (6 out of 30 codes) and two (UN agencies) (7 out of 26 codes), three (9 out of 31codes), four (3 out of 19 codes) and five (5 out of 25 codes) (International NGOs) had least technical barrier frequency. This could be attributed to more competent technical staff and allocation of funds for building information system or presence of joint information system. However, there were case to case variations with case three having technological and overall information system related issues, including lack of commitment among parties involved in the SC to share relevant information; lack of technology-support system and comprehensive information system with clear information structure to facilitate IS; lack of internet connectivity which limited IS and overall communication; lack of donor support for system development and common platform for IS. Lastly, case three confirmed that some organizations face difficulties related to procurement and distribution as seen from the humanitarian misconception among some suppliers. This could be lack of SC awareness or incentives to motivate positive behaviour among partners.

Case five had unmet needs prior to distribution of supplies to the affected population; lack of backup system and other related accessories for secure storage or data recovery system; and lack of donor support for system development. Although more similar to case three, the issue of IT system was more pronounced in this case. Case two revealed the problem of securing adequate funding, lack of commitment to IS, difficulties in designing user friendly system, lack of standards across the databases, tools, and information shared, and partial uptake of IT particularly by the government and poor time distribution between information system management and fieldwork. Similarly, case one had technical issues such as lack of funding and IT expertise, delayed reporting

/communication and lack of commitment among partners to IS, lack of standardized information management system and poor time distribution between information system management and fieldwork. Both cases one and two had similar technical challenges because of involvement of many partners that posed more demand in resources. Case four experienced lack of relevant protocols to facilitate inter-agency IS unlike other agencies and their donors. Other agencies experienced effort duplication due to lack of unified information system indicators between them and their donors to ensure timely and accurate IS to facilitate response action.

Overall, the cross-case analysis revealed diverse issues among the humanitarian actors. However, case eight was the most affected with technical barrier since it had high impact on IS. Other cross-cutting issues included inadequate funding, priority setting and overall implementation challenges, delayed response due to poor coordination with other SC partners largely due to lack of commitment to IS, lack of donor support towards the information system or strict donor regulation on expenditures and budgetary allocations and lack of a well-organized SC. Although cases six and seven were closely related with case eight, they did not face serious issues such as lack of a well-organized SC, and lack of priority setting and overall implementation challenges, and delayed response due to poor coordination with other SC partners because of lack of commitment to IS. Cases one, two , three, four and five were not seriously affected with technical barriers which may be attributed to relatively adequate resources, including technical staff and funding to facilitate IS across the SC partners.

7.2.3 Key Finding 3: Managerial barriers to information sharing

Among the cases examined, only case two had managerial barrier with 8 out of 26 codes (Table 7-3). These included lacks of motivation and staff turnover that caused shortage of relevant skills and workforce; lack of relevant training and experience among employees, resulting in frequent orientation and workplace training on appropriate IS and management; lack of trust in taking the right-decision by staff; lack of adequate time for data collection and management, inadequate inter-agency IS and demotivated staff to share information.

Table (7-3): Managerial barriers to information sharing

Management barrier (Lack of trust, Skills and capacity building, Employee retention, Lack of motivation to use information and lack of experience).			
Case number	**Frequency of codes**	**Total frequencies of codes for each case**	**Frequency infraction**
1	5	30	0.17
2	8	26	0.31
3	4	31	0.13
4	3	19	0.16
5	1	25	0.04
6	3	24	0.13
7	3	25	0.12
8	3	22	0.14

Case one had 5 out of 30 codes of managerial barriers to IS, including failure to identify active actors, and lack of trust among them during IS; and the need for data management skills among staff to facilitate data management and IS. Similarly, case four had 3 out of 19 codes of managerial barriers to IS, including lack of relevant training for overall system management, lack of relevant experience to share the right information and lack of information management skills.

Case six had 3 out of 24 codes of managerial barriers to IS such as lack of trust and challenges in winning donor confidence and funds particularly by first-time implementers or small organizations which affected IS. By contrast, case eight had 3 out of 22 codes of managerial barriers to IS, including delay in service delivery and overall IS largely due to lengthy engagement and new staff training process and lack of relevant skills and capacity building among staff members.

In general, only case two (UN agency) had the highest frequency of managerial barrier while the rest had the least frequency. This is likely due to diverse barriers, including lack of motivation and staff turnover, which caused shortage of relevant skills and workforce; lack of relevant training and experience among the employees; lack of adequate time for data collection and management and inadequate interagency IS that contributed to limited IS capacity among humanitarian actors. All the other case had relatively the same issues but to a minimal extent although case six had its unique challenge of winning donor confidence and funds particularly by first-time implementers or small organizations which affected IS.

7.2.4 Key Finding 4: Socio-cultural and religious barriers to information sharing

Socio-cultural and religious barriers had generally less frequency than the above barriers since the highest frequency for this barrier was found in case three (International NGO) with 6 out of 31 codes (Table 7-4).

Table (7-4): Socio-cultural and religious barriers to information sharing

Socio-cultural and religious barrier (Corruption, Culture, tradition and religion)			
Case number	**Frequency of codes**	**Total frequencies of codes for each case**	**Frequency infraction**
1	1	30	0.03
2	0	26	0.0
3	6	31	0.19
4	0	19	0.0
5	3	25	0.12
6	0	24	0.0
7	0	25	0.0
8	0	22	0.0

These included cultural, traditional and religious practices and corruption among the actors and the overall community that limited IS. Case five (International NGO) came next with 3 out of 25 codes, and had domestic violence and non-disclosure of cultural-related vices due to lack of effective behavioural change communication strategies to ensure effective IS, and due to corruption practices. Case one (UN agency) had 1 out of 30 codes as a result of religious barrier that elevated the cost of program implementation in order to meet the needs of the target population.

Overall, socio-cultural and religious barriers were common with international NGOs (cases three and five) than UN agencies (case one) due to geographical area of operation and organizational culture both of which are key cross-cultural risk sources. Notably, none of the local NGOs reported socio-cultural and religious issues most likely because of operating within their area of establishment with limited geographical influence.

7.2.5 Key Finding 5: Quality barriers to information sharing

Quality related and other minor barriers only featured in cases three (1out of 31 codes) and five (International NGOs) with 7 out of 25 codes and case six (Local NGO) with 1 out of 24 codes. The highest frequency was observed in case five with 7 out of 25 codes (Table 7-5), and included subjective, delayed or incorrect IS content.

Table (7-5): Quality barriers to information sharing

Quality barrier (Relevance of information Untimely information sharing)			
Case number	**Frequency of codes**	**Total frequencies of codes for each case**	**Frequency infraction**
1	0	30	0.0
2	0	26	0.0
3	1	31	0.03
4	1	19	0.05
5	7	25	0.28
6	1	24	0.04
7	0	25	0.0
8	0	22	0.0

Other cases that reported the same issue include case six (1 out of 24 codes) and case three with1 out of 31 codes. While case six reported the issue of untimely IS, case three experienced irrelevant IS among partners. By contrast, case five had a hybrid of case three and five issues, suggesting much effect on IS due to lack of funding and adequate resources to facilitate IS (e.g. server and databases). Overall, quality barrier affected cases three, five and six largely because their information systems lacked relevant skills and capacity, and lack of donor support for system development.

7.2.6 Key Finding 6: Financial barriers to information sharing

Financial barriers showed the highest frequency in case seven (Local NGO) with 4 out of 25 codes (Table 7-6) and was caused by need for M & E funding at every implementation stage in order to ensure timely data collection for information processing and sharing as well as lack of funding due to stiff competition and biasness from donors due to geographical origin.

Table (7-6): Financial barriers to information sharing

Financial barrier (IT, Knowledge and experience sharing among workers, Insufficient funding for monitoring and evaluation, Competition from stable organizations).			
Case number	**Frequency of codes**	**Total frequencies of codes for each case**	**Frequency infraction**
1	1	30	0.03
2	0	26	0.0
3	0	31	0.0
4	0	19	0.0
5	0	25	0.0
6	0	24	0.0
7	4	25	0.16
8	2	22	0.09

Case eight (Local NGO) had 2 out of 22 codes due to lack of effective knowledge/experience management and IS among staff or actors and lack of funding towards IT which collectively led to limited IS. The findings on case one (UN agency) had 1 out of 30 codes due to lack of funding towards system development and overall management, untimely response due to delayed communication, and poor quality of information shared due discrepancies.

Generally, the issues of securing funding and the associated competitiveness were more common in local NGOs (cases seven and eight) than the UN agencies (case one). Again, the chance for securing funding by local NGOs was minimal than the UN or international NGOs since most donors believed they lacked the capacity to deliver credible work. However, case eight was much affected by issues related with lack of human resource system than case seven which were mainly from external sources.

7.2.7 Key Finding 7: Language barrier to information sharing

This study revealed that only three cases experienced language barrier. Case three (International NGO) had 2 out of 31 codes with IS barrier factors such as lack of common terminologies and communication language. However, case four had 1 out 19 codes with lack of common language while case five experienced lack of common terminologies and communication language as the IS barriers (Table 7-7).

Table (7-7): Language barrier to information sharing

Language barrier (Communication language)			
Case number	**Frequency of codes**	**Total frequencies of codes for each case**	**Frequency infraction**
1	0	30	0.0
2	0	26	0.0
3	2	31	0.06
4	1	19	0.05
5	1	25	0.04
6	0	24	0.0
7	0	25	0.0
8	0	22	0.0

Notably, all international NGOs (cases three, four and five) lacked standardized IT or communication likely because of high adoption of non-standardised IT related technology and the geographical area of operation where the language of communication is foreign to the staff. Therefore, the agencies had to engage translators or take more time to learn local languages which eventually affect IS.

7.2.8 Key Finding 8: Opportunism barrier to information sharing

The last barrier factor was opportunism and was found in case seven (Local NGO) with 1 out of 25 codes due to exploitation of other organizational resources (e.g. including staff) by others without reciprocating or due compensation (Table 7-8). This was common with large and stable organizations (UN agencies and International NGOs) that took advantage of small and unstable organizations (Case seven) through unfair partnership.

Table (7-8): Opportunism barrier to information sharing

Opportunism barrier (Exploitation)			
Case number	**Frequency of codes**	**Total frequencies of codes for each case**	**Frequency infraction**
1	0	30	0.0
2	0	26	0.0
3	0	31	0.0
4	0	19	0.0
5	0	25	0.0
6	0	24	0.0
7	1	25	0.04
8	0	22	0.0

7.3 Summary of cross-case analysis

Although these findings were identified at horizontal coordination of humanitarian supply chain management, there are similarities to what was reported in literature about vertical coordination at business supply chain management faced various information barriers including organizational barriers such as lack of organization structure, lack of commitments by top management for IS and strategic planning; lack of trust between organizations member and mutual cooperation; lack of organizational readiness to adopt and use e-markets and unwilling to share risk and reward

(Grimm *et al.*, 2015; Manzouri *et al*., 2010; Forslund & Jonsson, 2009; Cetindamar *et al.*, 2005; Ardichvili, 2003; Mentzer *et al*., 2001; Ahn *et al*., 1999).

Organizational barrier such as lack of favourable structures and terms for sharing information among humanitarian organizations emerged in several cases (Cases one, four, five, six and eight) which limits IS. In addition, this study identified competitive barriers among humanitarian organizations which hinder IS similar to a previous report by Tchouakeu *et al*. (2011) that some organizations avoid sharing information with others as a way to avoid competition and ensure that they dominate the market. Another closely related factors are centralized leadership systems (Abidi *et al.,* 2015). In such organizations, employees lack the power to share information since they have to seek authority from their superior in order to make decision (Pandey *et al.*, 2010). Similarly, some humanitarian organizations may resist sharing of information due to structural conflicts and differences. Other organizational issues cited previously are cost and complexity of implementing advanced systems which may limit some actors to share information due to high capital investments and lack of cost-sharing agreements (Fawcett *et al.*, 2007; Patnayakuni *et al.*, 2006; Moberg *et al.*, 2002; Lee & Whang, 2000); and power asymmetry between SC partners, which can result in resistance to sharing information (Christopher & Juttner, 2000).

Among the technical barriers identified by this study and the previous literature include lack of or poor IT infrastructure; poor IT utilization and lack of technology due to financial constraints; lack of organizational readiness to adopt and use e-markets and lack of user-friendly IT systems which significantly affected IS (Khurana *et al.*,2011; Yang & Maxwell, 2011; Manzouri *et al*., 2010; Kim & Lee, 2006; Sohal *et al.*, 2001; Lee & Whang, 2000).

Technological barriers such as bureaucracy and lack of relevant technology and overall information system delay in response result in various challenges, including untimely data collection, inaccuracy of information generated and lack of standards among others. For instance, this study found that government agencies are characterised with bureaucratic barriers which may limit the use of IT, and may explain what Harland *et al.*(2007) that integrating information when adopting E-business into SC functions has proved to be slower than expected.While IT use offers great hope to address these challenges, it is associated with disadvantageous (Kovács & Spens, 2007), including poor substitute for face-to-face communication since employees use machines to communicate rather than meeting and knowing each other, thus creating poor relations at work (Chandes & Paché, 2010). Besides, IT implementation demands high installation and manage expenses, especially in big organizations, and time-consuming (Winter & Knemeyer, 2013).

Manegerial related barriers included lack of SC vision, common goals and mission for cooperation and lack of relevant skills, knowledge , experience, awareness about SCM; poor leadership and understanding concepts (Grimm *et al.*, 2015; Yang & Maxwell, 2011; Manzouri *et al*., 2010; Forslund & Jonsson, 2009; Mentzer *et al*., 2001). Manegerial barriers such as lack of relevant skills and capacity building may explain poor growth and development of effective information sharing systems and lack of IS structures across the humanitarian supply chain. According to Kaplan (2010), vision-related barriers are seen in an organization through ineffective mission and/or vision statement which may not clarify the core business matters and fail organizational goal. In their views, Abidi *et al*. (2015) stated that lack of leadership and managerial skills also hinders information sharing implementation and processes. This may be attributed to lack of training and experience besides low technology (Alftan *et al*., 2015). Other factors cited in previous studies are poor strategic information alignment, lack of awareness regarding potential benefits associated with IT adoption, lack of leadership-related management and related thrift in different contexts of organizations. Commitment, confidence and leadership are crtitical elements to managerial staff which will enable them to implement sharing of information (Van Der Vaart & Van Donk, 2008).

Quality related barriers included delayed IS; inaccurate and irrelevant information (Yang & Maxwell, 2011; Ahn *et al*., 1999), while other language barrier included poor communication among parties (Ahn *et al*., 1999). Socio-cultural included negative beliefs about communicated information and religion (Khurana *et al.*,2011; Ahn *et al*., 1999) largely due to traditions; and financial barriers (Sohal *et al.*, 2001). Quality barrier featured in terms of untimely or delayed IS among partners or subjective and inaccurate IS that limited effective SC management. Consequently, the information shared lacks reliability and validity and thereby irrelevant for sharing (Capo-Vicedo *et al.*, 2011; Li *et al.*, 2006; Moberg *et al.*, 2002; Lee & Whang, 2000). Therefore humanitarian actors should take necessary steps to address quality-related gaps during information generation, analysis and dissemination in order to respond effectively to complexities arising from disasters occurrence.

Sociocultural barriers identified in this study ranged from traditional, cultural to religious and corruption practices limit IS across the HSC. Pandey *et al. (* 2010) argued that information management requires conducive organizational culture that promotes support, enthusiasm as well as co-operation among the workforce regardless of carder (Alftan *et al.,* 2015). Moreover, organizational culture affects the attitude of employees to share information (Connelly & Kelloway (2003) and thereby cultural gaps should be addressed to ensure smooth IS among stakeholders (Akhtar *et al*. 2012). Other related social barriers that should be given attention to ensure effective IS are lack of commitment among employees and lack of conducive environment (Van Brabant, 1999).

Another key barrier to IS in this study wsa financial barrier which emerged as a major need to finance information system and associated accessories since some agencies used outdated system which impacts adversely on IS. This is in agreement with previous study that adequate finance advesrly affects installation of information systems, training staff and the overall information system implementation (Pandey *et al*, 2010).

Language barriers featured mainly in terms of terminologies or professional jargons and loss of some information during communication. This supports previous report that some organizations used different hardware or programming language as well as software and thereby pose difficulties to integrate and other related challenges (Akhtar *et al.*, 2012; Dolinskaya *et al.*, 2011) and even IS breakdown if not addressed early enough (Huo *et al.*, 2015; Hoffman &Mehra, 2000). There is also much evidence that different technological capabilities among chain members is characterised with inter-organization information system cause difficulties (Iakovou *et al.*, 2014; Dawes, 1996). For instance, the experts may fail to maintain the available technology as a result of rapid and/or gradual technological changes and thereby cause barriers to information sharing (Dash *et al*., 2013; Balcik *et al.*, 2010).

Oppurtunistic barriers emerged when some organizations use other organizational resources such as the staff and information without due compensation. This is typical example of unfair distribution of risk and benefits among partners (Lee & Whang, 2000). The result is that SC members do not embrace the culture of IS willingly to avoid opportunistic behaviour and prevent leakage to competitors. Figure (7-1) provides a summary of IS barriers across the HSCM at horizontal coordination.

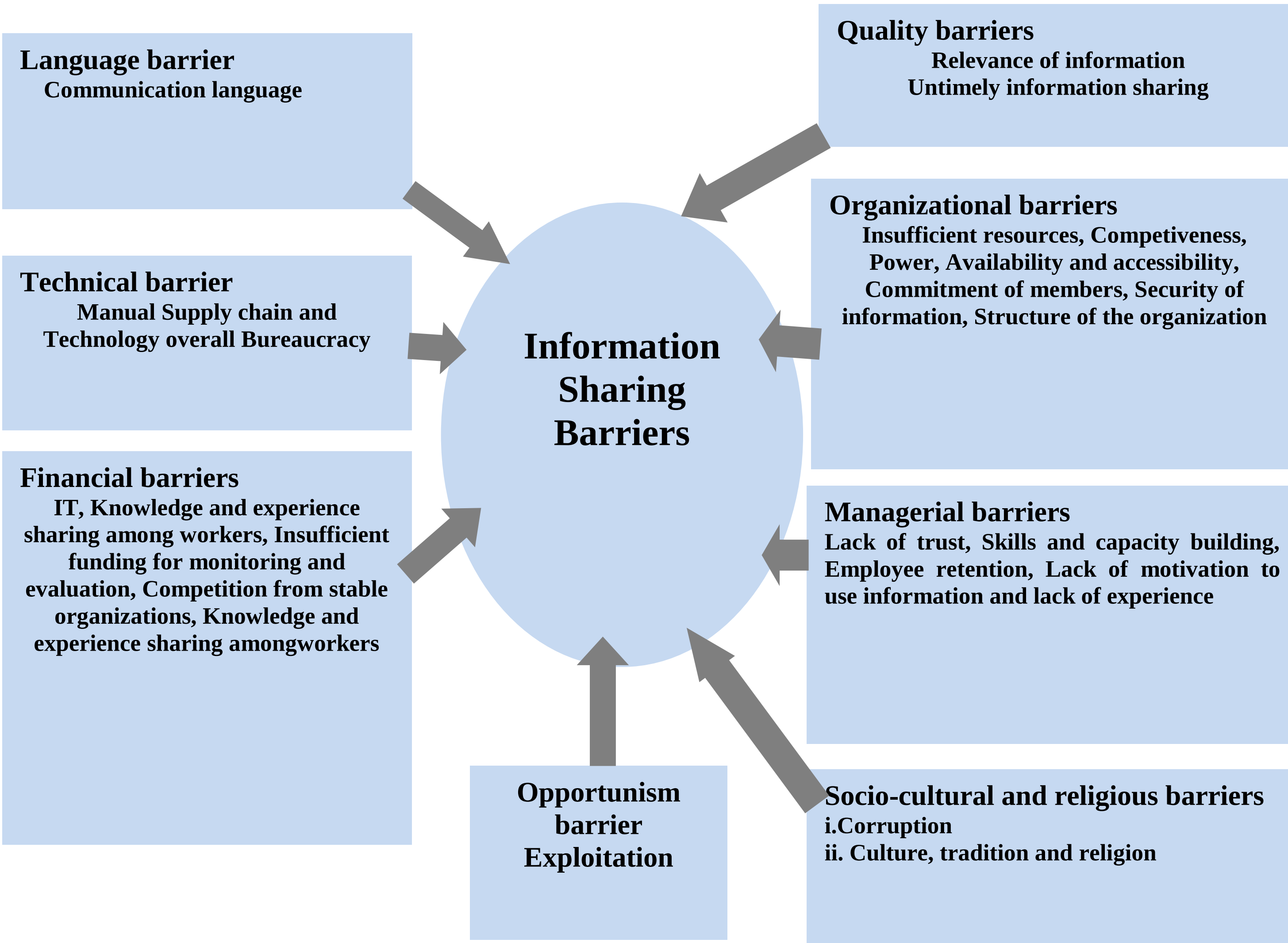


Figure (7-1): Asummary of information sharing barriers in humanitarian supply chain management at horizontal coordination.

7.4 Discussion of the findings

This study focused on IS barriers of HSCM at the horizontal level of coordination in Jordan. TA of the eight cases as stated before followed by scanning the interview content for each theme, fact development, incorporation of illustrative and representative IS barriers related to each theme and finally taking notes based on phases and themes so as to structure the cases. By contrast, cross-case comparison analysis was done based on categories from each case, codes and themes to determine the similarities and differences across the cases. This aimed to expand the scope of the initial data analysis based on structural and diverse lenses to ensure improved theoretical accuracy as well as reliability in relation to the analysed data (Eisenhardt 1989). Comparison of emerging findings with IS theory and other relevant perspectives was done using analytical generalization method.

7.4.1 Organizational barriers to information sharing

Organizational barriers were generally the highest frequency across all the cases (cases one, four and six) followed by (cases two, three, five, six, seven, and eight). Among the main sub-themes included insufficient IS resources, competiveness between organizations and power struggle. The decision for withholding information from other SC members may be reached for purposes of managing negative behaviours of SC partners and to avoid exploitation (Kim *et al.*, 2006). For instance, sharing inventory levels or information related with demand patterns as well as marketing strategies to SC partners risks the company to lose volume discounts rather than giving them for offer (Klein & Rei, 2009). Conversely, organizations may keep information from their partners during product development and growth stage to cushion themselves against opportunistic partner. Other companies withhold information by avoiding IT systems that promote specific relations in order to protect it as an asset (Tan *et al.*, 2010; Klein *et al.*, 2007).

Insufficient IS resources featured in all cases and ranged from lack of relevant skills and capacity among the actors; lack of experience to share information and knowledge, lack of funding, and material resources and relevant technology, information systems among others. Effective coordination requires various resources such as human, technology and knowledge related with SC concepts, among others (Gittell & Weiss, 2004). Limited resources may be classified into human, capital, and infrastructure of which Tomasini & Van Wassenhove (2009) describe the human resources as being associated with "high turnover, heavy physical and emotional demands" as well as a "limited pool of qualified and readily deployable personnel" (p.9). Although capital is crucial for humanitarian response, organizations faces various challenges such as insufficient, delayed and even cancelled funds, and thereby result in what Tomasini & Van Wassenhove (2009) describe as "liquidity as good credit terms for new suppliers, is an issue for managers on the ground"(p.9). Infrastructure is also critical to logistical measures, and may be damaged, insufficient or inexistent (Long & Wood, 1995) as identified in the current study. The implications are lack of human, capital, and infrastructure which impact adversely on IS across the SC and overall performance business entities.

Organizational barriers to IS are also enhanced through competiveness among organizations. The current study found that some partners withhold information for fear of facing competition and lack of accountability. This practice is common particularly with donor funding related information or when dealing with competitors, and therefore results in limited coordination and poor interventional outcome. Issues related to fundraising are very critical to humanitarian actors, including the UN agencies as well as international NGOs (Stephenson 2005 cited in Oloruntoba & Gray, 2009) since most of them do not generate their own income to support their missions and therefore insufficient resources result in competitiveness among them (Tomasini & Van Wassenhove, 2009).

Among the NGOs, Oloruntoba & Gray (2009) noted that "many humanitarian NGOs do exactly the same things: they go to the same donors (governments, institutional and private); they use the same mass media to raise funds; their marketing strategies are very similar; and they use the same transport carriers and logistics service providers." (p.495) and may finally become a brand. As a result, Fenton (2003) argues that this culminates into competition "often to the detriment to valuable coordination" (p.24). However, this study found that the impact of competitiveness was minimal largely because sharing information itself is essential for one to receive information.

While some organizations value IS with their partners, others do not since they believed that keeping information makes them more powerful than others by allowing them to secure donor funding or even perform better than others. Ironically, the same NGOs source information from others, suggesting that they are opportunistic. This is consistent with what Bowersox, *et al.* (2010) reported that "in most business situations, knowledge is power, so unwillingness to share and a general lack of understanding how to share knowledge are not uncommon" (p.259). Of note, there is no successful cooperative effort without IS despite chances of bearing mixed outcomes of good and evil. Data, information as well as knowledge empower an organization and therefore attain competitive advantage over others. This explains why agencies fear to share information with their partners, especially their perceived competitors. Lewis (2007) describes funding source information as the power-bearing information that organizations hesitate to share. Similarly, logistics processes related information is not easily shared to partners as described by Mayr (2006) that the principle is that "the organization which is first at the disaster site gets more publicity and thus more donations" (p.87-88).

Lack of commitment was identified as an organizational barrier to IS at inter-agency level due to lack of interest and commitment to share information among partners which suggests the need for motivated actors who can make efforts to facilitate the process. There was also delayed IS among organizations which eventually affected the overall program implementation. Collectively, these issues highlight the need for SC members to coordinate through IS about demand, orders and inventory and/or shipment quantity and POS data, among others. However, downstream customers should maintain timely demand information and advanced commitments in order to reduce inventory costs through price discounts and using the information to substitute for both lead time plus inventory (Reddy & Rajendran, 2005). IS value increases with supplier's service, supplier-holding costs as well as the demand variability plus offset time but reduces with cycle length (Chen *et al*., 2000). Increased IS increases the effectiveness of SC practice to ensure superior performance (Zhou & Benton, 2007). Therefore organizational structures should facilitate timely and coordinated humanitarian response by ensuring very short lead time and effective communication. Regarding organizational structures, it was established that some organizations lack harmonized structures and proper mechanisms to facilitate coordination of IS. Therefore, most organizations are characterized with uncoordinated service delivery and duplication of efforts. Tomasini & Van Wassenhove (2009) submit that "information is the foundation upon which the humanitarian supply chain is designed, formed, and managed" (p.90). Moreover, they maintain that effective coordination and cooperation relies "on IS, knowing who will be involved in the disaster response, in what capacity (lead agency, implementing partner, inter-agency coordinator, etc.)" (p.49); and that "sharing data is difficult and yet essential" (p.105). Other companies minimize IS with partners to reduce the risk of wasting organizational resources without increasing the SC performance and not meeting the customers' needs (Wong *et al.*, 2012; Vanpoucke *etal.*, 2009).

Samaddar *et al.* (2006) notes that the SC context may comprise structure similar to partner relationships (Vanpoucke *et al.*, 2009) as well as supply uncertainty (Lee & Whang 200) plus customization point (Van der Vaart & van Donk, 2008). Comparative studies of no and full IS policies found that information sharing policy promote reduction of inventory and cost savings (Yu *et al*., 2001). SC with full IS costs an average of 2.2% lower compared to traditional information policy with a maximum difference of 12.1% (Cachon & Fisher, 2000). Moreover, the full IS SC policy had faster and cheaper processing with ultimate shorter lead times. Supplier may benefit from the retailers' inventory information by maximizing stock allocation among retailers (Moinzadeh, 2002).

Companies need to take different approaches to governing relationships across their SC in view of partners' geographic dispersion (Stock *et al.*, 2000). IS offers benefits especially in the case of munificent SC with complex products in an environment with less uncertainties (Wong *et al.*, 2012). Similarly, Caridi *et al.* (2014) suggest that complex SC requires increased visibility. In their views, focal companies are less likely to integrate IS across the SC, especially because they have very little visibility among the suppliers. Organizations may make more gains when they invest in inter-organizational systems during high product or component complexity but low market fragmentation (Grover & Saeed, 2007). Furthermore, optimal performance across the SC result when there is a match between information processing capabilities due to electronic information transfer and information processing needs resulting from inter-organizational context (Kim *et al.*, 2006).

7.4.2 Technical barriers to information sharing

This is another major barrier ranked in frequency with highest in case eight then cases six ,three and seven followed by cases one, two, five and four. The study identified sub-themes manual SC, bureaucracy and technology and overall information system. More specifically, there was misconception about humanitarian organization that arise during communication with suppliers across the SC and eventually cause difficulties related to procurement or service delivery. These included the complexities involved in need assessment process and case mapping before supplies distribution, lack of routine activities and harmonized guidelines along the SC, and managing individual staff, among others. Similarly, Piplani &Fu (2005) suggested that "plug and play" misalignment of SC results in difficulties related with dynamically interchanging products (short lived products) as well as partners within the dynamic business environment. Other barriers included lack of sharing information with suppliers by some organizations unless they qualify for an annual tender award; and use of amorphous SC which does not facilitate overall response and IS effectively. There are also risks and uncertainties involved in reaching and maintaining the best suppliers across globe regardless of the management demands associated with global SC.

Nonetheless, effective SC coordination offers various benefits, including excess inventory elimination, lead times reduction, increased sales and customer service to efficient efforts of product developments, low manufacturing costs, increased flexibility in coping with high demand uncertainty, customer retention as well as revenue (Lee *et al.*, 1997a,b). SC comprise of various activities integrated in various functions or organizations for a period of time with a view. Notably, SC increase complexity and participation of different suppliers, service providers as well as end consumers through various relationships with potential risks and vulnerability for all players (Pfohl *et al*., 2010). However, the benefits from joint SC performance indicators may offer no value unless fair share mechanisms are put in place.

Bureaucratic barrier to IS was observed through failure of the government to recognize information system as an official IS means. There is evidence for bureaucratic structures with regard to food aid sizes, and beneficiary categorization (Feldbrügge, 2001). Besides, humanitarian organizations face restriction when handling donor funding based on terms of agreement and allocation per activity failure to which may amount to cancellation. Lewis (2007) cited by Carroll (1992) that "NGOs which are funded by donors must always prioritize the provision of reports and information to these donors, but at the same time the organization must maintain a focus on the implementation of projects and the maintenance of effective relationships with the beneficiaries." (p. 202). These issues impact negatively on IS process especially where funds are not allocated to information system. This implies that funded organizations have the onus to observe the interests and terms of agreement (Thomas & Kopczak, 2005). The challenge is that the agency-agency cooperation becomes more difficult since the organizations are unable to exercise their full capacity and neglect inter-agency activities such as joint fund appeals. Therefore, most organizations are compelled to comply with funding applications and financial management to donor's requirements so as to secure long-term support.

Humanitarian organizations are required to comply with rules, laws as well as government regulation in their country of operation but some governments may decline to receive the aid or deny entrance to the humanitarian workforce to respond to disasters (Balcik *et al.,* 2010). The agencies may fail to meet donors' contractual obligations despite difficulties in securing funding from private donors (Balcik *et al*., 2010) due to stiff competition (Tomasini & Wasenhove, 2009). Furthermore, funded agencies are required to work with restrictions regarding the types of activities that must be budgeted for (Balcik *et al*., 2010) largely due to limited resources for financing humanitarian coordination activities (Tomasini & Wasenhove, 2009). Delayed funding is another limitation to humanitarian response since they are donor-driven and financed (Tomasini &Van Wasenhove, 2009). Similarly, they may encounter difficulty of securing adequate funding towards humanitarian aid researches (Pettit *&* Beresford, 2009).

Various issues associated with technology and overall information system were raised by participants, including delay in response due to technological challenges, and untimely data collection, inaccuracy of information generated and lack of standards among others. IT use improves coordination across the SC (Sanders, 2008; McAfee 2002) and thereby promotes performance measures such as customer service, lead-time plus production costs (Vickery *et al.*, 2003). IT underpins seamless production point linkage with delivery or purchase point, and facilitates planning, tracking and lead times estimation using real time data. Advancement in IT, including internet, EDI, enterprise resource planning (ERP), e-business and others allow rapid products, information, as well as funds exchange and maximize SC operations based on collaborative methods.

Internet and web promote effective communication and therefore allow SC members to review past performance, track ongoing performance as well as predict production time and desired product quantity or manage workflow system (Liu *et al*., 2005). E-business employs specific internet and managerial tools to facilitate sales, distribution or customer service processes as well as sourcing, procurement, tendering (Swaminathan & Tayur, 2003) and order fulfilment processes, and e-manufacturing (Kehoe & Boughton, 2001). Among the various coordination problems addressed through information systems include minimal supplier value due to competitive bidding, imposed IT implementation, incompatible information system across the SC levels, greater lead times as well as inefficient purchase order plus misaligned e-business strategies together with coordination mechanisms (Porter, 2001). Other issues include technological overreliance (McCarthy & Golocic, 2002; Lee *et al.,* 1997b). Notably, SC integration links IT implementation relationships with SC performance. However, the changing business environment of IT such as appropriate usage, reason for investment and alignment with business environment must be put into consideration in order to realize competitive advantage (Gunasekaran *et al.*, 2006).

Gustavsson (2003), states that "very little capital has been invested in the development and implementation of modern management information systems (MIS), information technology (IT) or logistics systems" (p. 7). There is also lack of IT standard, which impacts negatively on individual organization and SC supply chain relationships (Gustavsson, 2003), including delayed response (Pettit & Beresford, 2009). These issues highlight humanitarian problems related with coordination and cooperation due to lack of IS, logistics training, media relations, and assessment among others. Tomasini & Van Wassenhove (2009) demonstrated that "there is a lack of peer collaboration to jointly address the media" (p.108) and lack of IS about cargo consolidation (p.126) and thereby the magnitude of loses incurred in humanitarian sector.

7.4.3 Managerial barriers to information sharing

Case two had managerial barrier with the highest frequency while the rest (one, three–eight) had the least frequency. These included lack of trust, skills and capacity building, lack motivation to use information and employee retention, lack of donor confidence, and complex employee recruitment process. Companies increasingly working in partnership with few trustworthy suppliers. In such governance relations, at least two partners are mutually dependent on each other to manage their relationship based on informal mechanisms such as social controls (Patnayakuni *et al.*, 2006). As a result, the exchange relationships are cemented together to ensure mutual benefits and sustainable partnership (Nyaga *et al.*, 2010). Notably, the relationship is built on trust which guides inter-personal as well as inter-firm relationships as opposed to opportunistic behaviour (Kim *et al.*, 2006). SC partners need to share information in order enjoy increased cooperation (Klein & Rai, 2009). Companies should consider promoting mutual trust as well as reciprocated benefits in order to promote IS, which may facilitate relational alignment that drives competitive advantage (Tan *et al.*, 2010).

7.4.4 Socio-cultural and religious barriers to information sharing

Socio-cultural and religious barriers were associated with cases one, three and case five, and included traditional, cultural, religious, and domestic violence issues; and corruption practices limit IS during response to humanitarian needs. Organizational culture is also essential to IS. Notably, data, information or knowledge constitutes organizational culture, and sharing them may be resisted explained by Tomasini & Van Wassenhove (2009). Corruption practices vary widely in humanitarian sector depending on the context of its occurrence and the type of action. The current study found that some actors expect a bribe or favors in order to share information, and therefore limits the process which is consistent to a report by Transparency International (2007) that most disaster prone countries scored poorly on Corruption Perceptions Index.

7.4.5 Quality barriers to information sharing

Case five had quality barrier issues with highest frequency and cases six, four and three with least frequency, including untimely IS partners that sometimes caused delays, and eventually affected the overall program implementation; subjective and inaccurate IS that limited effective SC management. Sources indicate difficulties experienced in sharing knowledge about different organizational levels in humanitarian logistics, where it is required to be accurate, timely and affordable.

Failure to deliver solutions to existing humanitarian problems is attributed to substantial lack of technical knowledge amongst humanitarian agencies as well as corporations with eventual negative consequences (Pettit & Beresford, 2009). Humanitarian organizations experience various external and internal challenges during delivery of humanitarian aid due to logistical challenge of IS since the technology for SC performances by enhancing and developing communication across the chain (Fugate *et al.*, 2006). HSCM are also characterised with unpredictable timing together with disaster intensity prior to their occurrence. Besides, the regional infrastructure is unpredictable, posing management challenge to determine the required supplies before disaster occurrence (Balcik *et al.*, 2010). The situation is compounded with the temporal nature of some humanitarian initiatives (Gray & Oloruntoba, 2006).

7.4.6 Financial barriers to information sharing

Some organizations lacked mechanisms to ensure knowledge and experience transfer among actors or staff, lack of funding for information system and associated accessories and use of outdated system which impacts adversely on IS. The frequency ranged from highest (case seven) to least (cases eight and one) respectively. According to Capó-Vicedo *et al.* (2011), knowledge creation as well as sharing among partners relies heavily on collaboration and mutual confidence. Companies engage in collaborative relationships with their partners across the SC with a view to benefit from missing critical information as well as knowledge at internal level. Investing in inter-agency assets like electronic data interchange as well as effective governance mechanisms deployment may result in relational rents (Tan *et al.*, 2010). Nonetheless, not every type of information or knowledge is valuable enough for protection and sharing. Besides, the chances for success in using a single approach for IS across the SC are minimal (Samaddar *et al.*, 2006).

7.4.7 Language barrier to information sharing

Language barriers had highest frequency in case three then in cases four and five. These included terminologies or professional jargons and loss of some information during communication. Languages may hinder effective communication during aid delivery across the HSC (Shepherd-Barron, 2010) and may be a major problem during delivery humanitarian aid (Moser-Mercer & Bali, 2008). Besides, Bolton & Weiss (2001) demonstrated that “the aid worker brings all the knowledge and experience of his/her profession to the interaction. The affected person brings all of his/her respective knowledge and experience of his/her own situation” (p.252-256). Therefore, there is need for effective communication for successful humanitarian response.

7.4.8 Opportunism barrier on information sharing

Opportunism featured in case seven. This occurs some organizations take advantage of others by using their resources (including the staff and information) which results in unfair distribution of benefits. The reasons behind withholding information by firms from their SC partners are diverse. There are various mechanisms for governing IS such as compensating partners or fighting against opportunistic behaviour. Besides, companies need to establish formal contracts such as incentives and penalties so as to promote efficient information exchange (Porterfield *et al.*, 2010; Grover & Saeed, 2007). Sources indicate the need for compensating losses based mechanisms such as quantity discounts to revenue sharing contracts as well as incentive alignment policies (Chen & Chen, 2005; Li *et al*., 2001; Moses & Seshadri, 2000).

7.5 Summary of cross-case findings

Organizational barriers emerged highely in cases one, two, four and six. The possible reasons are the many partners collaborating with the UN agencies (Cases one and two) and International NGO (case four) and wider geographical area of operation as opposed to case six (local NGO) which experience lack of efficient organizational structures to facilitate inter-agency IS and lack of adequate workforce due to high turnover, among others. By contrast, cases three and five (International NGO) and seven and eight (local NGOs) are due to barriers such as largely due to lack of adequate donor funding and uncoordinated SC operation.

Among the cited reasons why case two (Agency) showed high frequency of organizational barrier, were lack of motivation and staff turnover which led to shortage of relevant skills and workforce among the employees. All the other cases had nearly the same issues except case six which had the challenge of winning donor confidence and funds which affected IS.

Socio-cultural and religious barriers were common in international NGOs (cases three and five) than UN agencies (case one).The possible reasons are geographical area of operation and organizational culture. Language barrier affected all international NGOs possibly due to high adoption of non-standardised IT related technology and the geographical area of operation which limited IS.

Local NGOs (cases seven and eight) faced more funding challenges and the associated competitiveness than the UN agencies (case one) or international NGOs since most donors perceived they lacked the capacity to deliver credible work. Quality barrier affected cases three, five and six largely because their information systems that lacked relevant skills and capacity that limited IS, among other factors. On the other hand, opportunism was common with large and stable organizations that exploited small and unstable organizations through unfair partnership.

Some organizations enjoyed information and knowledge sharing due to effective regulating mechanisms while others did not. A few others withheld their information from other actors for fear of competition, for amassing power or retain competitive advantage. Among the inter-agency initiatives that were developed to address IS barriers included group meetings, email exchange, agreements/protocols and common platform. However, there was still a knowledge gap in IS that could be addressed through awareness creation and other effective mechanisms.

In spite of various barrier factors such as lack of organizational structures, retention of power and confidentiality of personal details among others, organizations may still withhold information from their partners for security reasons, managing behaviours opportunistic behaviours of SC partners or simply protection of their assets. These issues could be addressed through compensation of any damages and overall knowledge management for effective SC coordination and IS.

Technical related barriers included bureaucracy, technology and overall information system. IT is widely used to support SC activities, including seamless linkage of point of production, procurement, and distribution of humanitarian supplies. However, there is need to ensure effective IT operating standardized system and awareness creation on its benefits to ensure wide adoption to facilitated SC performance.

Organizations use interpreters to translate one language to another in to facilitate communication and IS despite loss of some information during the process. Therefore some humanitarian actors are compelled to learn or train in local languages in order to enhance effective communication and IS across the SC partners for services delivery. Alternatively, they may engage staff members from their area of operation who are competent in the language to address the issue.

Although some organizations collected data for information processing and sharing, still others could not use the information due to lack of motivation among employees. While some organizations lacked human resources development plan to facilitate capacity building and overall career development, others lacked policies to promote knowledge sharing and experience among the staff. The situation is complicated by lengthy and involving recruitment process before engagement of new employee. The overall effect is lack of relevant skills, experience or workforce to ensure effective IS at organizational and inter-agency level.

In general, the findings showed that the HSCM was less developed since it lacks the right technology/tools, adequate capacity/skills, delayed communication, limited information and knowledge sharing, late recruitment and staff engagement, limited funding for capacity building, and weak information system among others. Collectively, these issues hampered effective IS process across the SC. By tailoring IS structures and governance mechanisms to the context of the transaction and the business relationship, organizations stand to make greater gains such as reduced transaction costs, improved cooperation and secured external resources.

7.6 Conclusion

IS within the SCM facilitates operations during service delivery to the target population. However, successful SCs require good IS to facilitate effective coordination among the parties. This study found that nearly. all the agencies experienced organizational barriers. This was followed by technical related barriers and managerial barriers; while socio-cultural and religious barriers had existed in cases one , three and five. Quality barriers featured only in cases three, four, five and six, Financial barriers showed in cases one, seven and eight. Language barriers revealed only in cases three, four and five while opportunistic barrier found only in case seven. Overall, this study found that the frequency barriers varied from case to case despite that organizational barrier ranked the highest one, followed by technical barrier, then managerial , quality, financial and socio-cultural and religious barriers, while language and opportunistic barriers had the least frequency.The key research key findings, contributions, opportunities for future research and overall research conclusion are outlined discussed in the next chapter.

CHAPTER 8: CONCLUSIONS AND CONTRIBUTIONS

This chapter provides the summary of the study, including the findings, and knowledge as well as practical contributions. The chapter concludes by highlighting limitations of the study and future research opportunities.

8.1 Summary of the major findings

This study explored the information sharing barriers of SCM at the horizontal level of coordination between humanitarian organizations in Jordan. The outcome of the study are relevant since they will provide insight on the research topic and facilitate evidence-based policy formulation and programming based on effective SCM with minimal IS and overall knowledge management related barriers.

Chapter 6 involved thematic analyses of each case study based on abstract codes and categories for each identified theme from the interviews. In total, the study identified eight themes based on which each case was discussed. These ranged from organizational, technical, financial, managerial , quality, language, opportunism, and social cultural and religious barriers. The study found that most of the barriers were mainly organizational followed closely with technical, managerial barriers. Among the minor barrier factors were financial barriers and socio-cultural and religious, quality, language and opportunism. Besides, these IS barrier factors across the humanitarian supply chain partners were related to each other in one way or the other. For instance, organizational related barriers such as lack of structures to facilitate information sharing was largely attributed to lack of strategic management or relevant expertise even where funding was not a major factor and eventually hampered IS across the supply chain. These findings increase factor as well as internal validity of the study and reliability of IS barrier factors and their interrelationships in each case study.

Chapter seven involved the use of cross-cases analyses to provide in-depth description of information sharing barriers based on constructs in order to organize the data as well as relate the findings with current literature to allow improvement of theoretical accuracy and reliability as well as draw conclusion and implications. The overall findings showed that IS barriers adversely affected HSCM relationships and consequently led to ineffective response to the demands of the affected population. Moreover, it was found that organizational related barriers (insufficient resources for sharing information, competiveness between organizations, power, availability and accessibility, commitment of members, security of information, and structure of the organization) were the most common barrier to information sharing, then technical barrier (Technology and overall information system, bureaucracy and manual supply chain), managerial (lack of trust, skills and capacity building, employee recruitment, staff experience, employee retention, and lack of motivation to use information), quality (Untimely information sharing and relevance of information), socio-cultural and religious barriers (Corruption, cultural, traditional and religious practices) , financial barrier (Insufficient funding for monitoring and evaluation, competition from stable organizations, bureaucracy, knowledge and experience sharing among workers, knowledge and experience sharing among workers and IT), language barrier (Communication language) and opportunistic barriers (Exploitation).Table (8-1) summaries the outcomes of chapters six,seven and eight.

These findings extend the research validity and reliability whereby validation is achieved through the relationship of the main findings and documented literature. The main observations across the eight cases are also explained to validate the theoretical contributions. The research increased the internal plus the external validity by elaborate case and cross-case analysis of the eight cases to enhance generalization of the findings to theory (analytical generalization). Reliability of each barrier factor was examined by comparing codes within the case and across the eight cases based on emerging relationships.

Table (8-1) Summaries of Chapters (6,7, 8) in this Study.

Research Chapters	Summaries
Chapter 6	The findings from chapter six were generated on each study case aimed to reduce collected data into organized and robust descriptive data set based on subthemes in order to facilitated theoretical link. Overall, thematic case analysis generated identified managerial, organizational, financial, technical, quality, socio-cultural,language and opportunistic related barriers as the main themes in this study. The study participants indicated various response actions taken by the humanitarian actors to bridge these issues and promote information sharing between different actors for a better horizontal coordination. These are: a) Inter-Sector Working Group such as health sector, water, sanitation and hygiene (wash) Sector, education sector and shelter sector; b) portal website data base; c) organizations report on monthly, quarterly or annual basis; and d) activity information which was mainly done through face to face meetings; d) sharing information with other NGOs through official emails; e) Training staff and other if they asked. Therefore, this allowed generation of themes and also revealed some relationships between barrier factors to information sharing.
Chapter 7	Chapter seven involved cross-cases analysis to relate the findings with current literature for contribution, drawing valid and reliable conclusion and research implications. Although this study identified eight types of barriers to information sharing as mention in contribution 1 above, the interventions that were being used were not bearing much result, particularly with regard to organizational, technical and managerial barriers. This highlights the need for more strategic and cost-effective methods to bridge for the current gap more effectively.
Chapter 8	Chapter eight provides a link between key findings and theoretical approaches based on which for future research direction, policy as well as managerial implications are recommended.

Overall, the foregoing conclusions reveal that technical, organizational, financial, managerial, quality, language, opportunism, and social cultural and religious related barriers limited information sharing across the supply chain partners to varied extent of which the most common were organizational and therefore the most limiting were organizational related barriers while the least common was opportunistic related barriers. Moreover, these factors were interrelated in that occurrence of one factor lead to the other. For instance, lack of employee motivation led to high turnover with eventual lack of adequate workforce, and relevant skills for data management and thereby lack of information sharing. While lack of strategic institutional systems caused ineffective information sharing and overall knowledge management ,much resulted from lack of strategic management skills ,lack competence among the technical team and lack of commitment or support by the management to allocate adequate resources for information system and overall knowledge management .Consequently, the HSCM was not effective and thereby poor response to the needs of the affected population largely due to lack or minimal information sharing. Certainly, these findings explain the associations among the conceptual factors associated with information sharing across humanitarian supply chain relationship.

8.2 Research Contributions

This study is significant as a new contribution to the knowledge of information sharing in HSCM and it contributes to the current knowledge of information sharing at horizanital level of coordination in CSCM as well as policy and managerial implications (practical contribution).

8.2.1 Contribution to Knowledge

The main contribution of this study was to identify the information sharing barriers of humanitarian supply chain management at the horizontal level of coordination in response to the key research gap of the limited and scarcity of information sharing issues in HSCM and that more academic research is needed particularly in information sharing and coordination as recommended in previous studies (Leiras *et al.,* 2014; Caunhye *et al.,* 2012; Kunz & Reiner, 2012; Overstreet *et al.* 2011; Natarajarathinam *et al*., 2009; Petit & Bresford, 2009, Kovács & Spens, 2007, Atlay & Green III, 2006).

The current study found interplay of the various factors (organizational, managerial, technical, language, quality, financial, opportunism, socio-cultural and religious factors (see Fig.7-1 page

273)) that limited IS. This allowed the researcher to link the findings of this study to the current literature of information sharing in order to explain the barrier factors of humanitarian supply chain information sharing at horizontal coordination. Therefore, bridging these barriers ensures effective information sharing and coordination among humanitarian supply chain partners.

The study findings are important in the field of IS across the humanitarian supply chains since it strengthens the current knowledge base on information sharing barriers to ensure in-depth understanding of these challenges and their impact on HSCM. Besides, the findings will inform the humanitarian organizations, including the managers to make evidence- based decisions and strategic planning to improve their operation through more effective response to refugees' demands. In addition, the findings will be vital in developing coordination structures to improve horizontal collaboration across the HSCM, especially being a new research area as noted by Pomponi *et al.*, (2015).

The study findings also contribute to the provision of an empirical evidence on limited understanding about logistical capabilities amongst humanitarian organizations across the supply chain, including the overall lack of or minimal information. As a result, the study may be used to explain factors contributing to this limited understanding and how they can be bridged to ensure practical understanding among the humanitarian organizations.

The study identified the importance of IS between humanitarian organizations in order to meet the demand of disaster response through addressing efforts duplication, poor planning, relief efforts implementation, lack of knowledge sharing among humanitarian organizations, synchronizing the mandates as well as stakeholders' roles and activities and senior organizational actors. This is achieved through better information coordination to promote inter-agency information sharing to ensure improved humanitarian relief as well as disaster response.

Another key contribution of this study was to raise the awareness among humanitarian organizations about the need for effective and efficient management of humanitarian relief effort during disaster response similar to that in the CSCM business sector. This was demonstrated by various challenges cited before within the humanitarian sector. For instance, the study identified lack of or minimal information sharing and trust amongst the actors across the humanitarian supply chain, suggesting lack of awareness about the benefits of information sharing and unwillingness to collaborate with other actors which negatively affected service delivery within the sector. Therefore these issues should be addressed to ensure efficient and effective HSCM that promotes reduced response times and timely aid delivery to save more lives.

This study shades light on information sharing barriers at horizontal level of humanitarian supply chain management and provide a knowledge base to academicians and scholars for their future research about HSCM practices plus service delivery. This will be beneficial to supply chain managers during design of more responsive and effective supply chain to fill the gaps of operational failures in humanitarian sector. Moreover, the findings add more current knowledge to the research area and therefore address the gaps of limited research in disaster relief context which is characterised by greater uncertainty and variability than commercial supply chain environment .

8.2.2 Managerial and Policy perspective (Practical Contribution)

Effective response to humanitarian need poses a major issue across the supply chain partners largely due to minimal or lack of IS. The findings are important to managers and other policy makers for making evidence-based decisions to promote improved service delivery across the sector. The results indicate that some organizations are aware of substantial benefits of information sharing and that majority of the organizations have implemented information sharing strategies such as governance policy, guidelines and agreements with their partners to facilitate IS and coordination across the HSC. However, IS and horizontal coordination processes were not effective due to to the barrier factors stated before. This study identified gaps that may be addressed in practice using various policy or managerial actions. For instance:

- There is need for policy makers in humanitarian organizations to understand the benefits of information sharing in supply chain when considering engaging in humanitarian aid in order to facilitate the information flow between humanitarian actors and minimize the various factors that limited IS identified in this study.
- The key findings such as organizational, managerial and technical barriers indicated at the importance of the establishment of a good supply chain relationship to be adopted by the managers and policy makers in humanitarian organizations based on structures as well as governance mechanisms that aim to promote transactional relationship for a better response.
- There is also need for policy makers to understand that trust, commitment and cooperation should be reflected through feedback to facilitate adjustments and formation of strong supply chain relationships. However, this is only achievable through multi-level coordination among the humanitarian partners in order to strengthen their relationships to enhance information sharing based on the study findings.

- The study findings suggest that supply chain relationship requires effective communication systems with social and technical networks to facilitate information sharing among the humanitarian organizations.
- Based on the study findings, donors and government as an important humanitarian actor are encouraged to initiate or provide adequate support for humanitarian organizations to enhance relationships and networks by implementing supply chain information sharing strategy to ensure effective humanitarian response.
- From the study findings, it is noteworthy that involving the government may be essential to ensure long-term and effective supply chain relationships between humanitarian organizations to enhance information sharing and high level of humanitarian activities to save lives of vulnerable people.

8.2.3 Strategic actions to bridge information sharing barriers

Although this study found that different response actions were employed to address the existing information sharing barriers across the supply chain, they were not adequate and effective enough to address the problem. Considering the research findings and in view of the foregoing discussion, the researcher recommends the following measures to management and policy makers and proposes several strategic actions that could be taken by humanitarian organizations in order to bridge the IS barriers identified by this research. These include: -

Strategic action 1. Standardization of business processes refers to using unified processes to achieve transparent and efficient operational processes. The issue of standardization emerged with regard to different databases, tools and overall information standards and systems interoperability. Moreover, organizational activities should be integrated internally or externally in order to facilitate supply chain process among the partners across the world. However, this is achievable with integrated IS system. In the recent past, there has been an increasing use of information and communication technologies (ICT) such as electronic data interchange (EDI), Internet as well as World Wide Web (WWW) to ensure that the system complexities related to increasing supply chain relationships are effectively addressed. This highlights the need for aligning organizational practices as well as systems interoperability so as to ensure same standards, indicators, guidelines as well as principles across the humanitarian supply chain to facilitate information exchange. Therefore this study recommends joint investments in inter-organizational systems like electronic data interchange as well as effective governance deployment mechanisms to promote relational rents (Tan *et al.*, 2010) and the mechanism of risk and reward sharing between organizations to achieve higher organization performance than would be achieved by the organizations individually (Lambert *et al.*, 1999).

Strategic action 2. The issue of weak information system dominated in this study as a barrier to effective information sharing. This pointed the need for to promote interdependence among supply chain members based on linking information sharing value to supply chain performance underpinned with multifaceted IT systems to deliver improved coordination all levels of supply chain (Skipper *et al.*, 2008), including software enabled Web plus extendable mark-up language to address technological problems easily, and internet connectivity to facilitate communication and information sharing. However, staff training cannot be ignored since relevant skills and experience are a prerequisite to effective knowledge management and may be easily achieved through joint IT training

Strategic action 3. Lack of standardized information and systems interoperability was also observed and could be addressed through adoption of inter-organizational systems alongside other issues related with service complexity across the supply chain. This approach will allow the organization to achieve greater performance across the supply chain due to increased technological information processing and transfer capabilities based on inter-organizational context (Kim *et al.*, 2006). To a larger extent, this will also align organizational practices as well as systems interoperability so as to ensure same standards, indicators, guidelines as well as principles across the HSCM to facilitate information exchange.

Strategic action 4. The issue of uncoordinated activities emerged in some cases due to lack of establishing strategic partnership to ensure effective SCM relationships underpinned with IS and overall knowledge management. In view of this obstacle, there is need for these cases to explore ways to establish bilateral dependence to promote willingness and commitment among partners so as to share information and eliminate duplication of efforts. In addition, this will ensure increased awareness of interdependence and the partnership strategy with measures to mitigate such negative behaviours. However, high dependency may adversely affect exchange relationships as well as information sharing and thereby the move should be checked by strategic dependency response and other governance mechanism to ensure mutual dependencies that can minimize associated uncertainty and dependency associated with limited but invaluable resources (Tan *et al.*, 2010).

Strategic action 5. The issue of lack of adequate fund emerged in some cases as a key barrier to information sharing. It is essential to consider establishing collaborative relationships and the need to build personal relationships and trust to enhance inter-organizational cooperation with greater operational efficiencies with other members of the supply chain. This will ensure that all the SC members benefit from information sharing and overall knowledge management to complement internal assets at organizational level. This may be extended to joint investments in electronic data interchange as well as effective deployment governance mechanisms to promote relational rents .

Strategic action 6. The findings showed significant lack of skills and capacity which is largely complicated by lack of human resource development plan as well as complex recruitment process that results in minimal or delay in information sharing. Additionally, sources indicate that IT cannot be considered in isolation from people since it is driven by human ability to ensure effective use to achieve optimum benefit (Zeleny, 1986), including information management and sharing (Fawcett *et al.* 2008; Lee & Whang, 2000). This study recommends joint or integrated human resource development through formal or informal mechanisms that promote improved information sharing and overall SC processes among the partners. The result is that the cases will ensure benefit from joint training in IT related skills and overall workplace training to address the current situation through effective communication and information sharing at minimal costs.

8.3 Research limitations and future research opportunities

This study offers insight on barriers of IS across the humanitarian supply chain in Jordan. However, it is limited in various ways which presents future research opportunities for improvement as discussed below.

8.3.1 Research ability to link findings and existing literature with information sharing .

Although this study linked the findings with existing literature on information sharing to explain the conceptual factors limiting IS, it is clear that they are not sufficient in themselves to provide comprehensive explanation. Therefore, future research should strive to explain these factors separately .

8.3.2 Mixed method approach

This study used qualitative methods with pilot study (expert interviews) plus multiple-case studies to extend the validity and reliability of the study. Qualitative methods are credited for being flexible, and thereby provide sufficient data on social, institutional as well as environmental conditions pertinent to this study (Yin, 2009). The approach employs various interpretive and material practices which visualize the world with overall global transformation. In this study, the researcher used field notes, interviews and conversations to transform the findings into various representations. This suggests that qualitative methods are rooted in interpretive to naturalistic global perspective. However, sources indicate that qualitative studies are biased, small scale or anecdotal, and lack rigor unless they are carried out properly to ensure that they are unbiased, in-depth, valid as well as reliable, credible plus rigorous. Besides, Murphy *et al*. (1998) noted that the approach requires assessment of the "extent to which claims are supported by convincing evidence" (p. 1-276). On the other hand, Tashakkori & Creswell, (2007) define mixed study as the "research in which the investigator collects and analyzes data, integrates the findings, and draws inferences using both qualitative and quantitative approaches or methods in a single study or program of inquiry" (p.4). This method is advantageous since quantitative and qualitative data complement each other stronger and valid results. Therefore, future research should consider mixed study design with quantitative and qualitative approach in order to improve quality of the findings. For instance, using longitudinal data would clearly explain the mechanisms employed by organizations to share information and how the process is affected during validation of the observed relationships.

8.3.3 Research sampling strategy

This study used only eight cases which were sampled purposefully to ensure that knowledgeable participants are identified and selected more effectively using limited resources (Patton, 2002). Moreover, the selected subjects are available and willing to participate, and able to communicate their experiences and opinions more articulately, expressively, and in a reflective manner (Bernard, 2002; Spradley, 1979). However, the method is limited since it is a non-probabilistic sampling method which is characterized by biasness and lack of representation to allow generalization of the findings to information sharing among humanitarian supply chain partners. In addition, it is also difficult to control for potential known or unknown confounders. This calls for future studies to use random probability sampling techniques, larger sample size and even comparative study design to allow valid and reliable generalization of the conceptual factors to humanitarian actors across countries with similar context to Jordan.

8.3.4 Conceptual barrier factors

This study employed various qualitative data analysis methods by Braun and Clarke (2006) and cross-case analysis adopted (Yin, 2003; Creswell, 1998) and Eisenhardt (1989), which rely on pattern codes, categories, themes and pattern matching in relation to key themes of the conceptual factors. Although these methods allow the researcher to link the research questions and subthemes, it was challenging to extend validity and reliability during within and cross-case analysis. This suggest the need to validate the innovative conceptual factors and internal validity based on mixed study methods that also allow better interpretation of the findings such as examining conceptual barrier factors from the perspective of policy-makers. Simply stated, future research should explore the conceptual factors identified in the current study based on quantitative and qualitative methods with larger sample size to allow statistical generalization of the research findings.

8.4 Future research directions

i) Future research to explain conceptual factors separately to ensure clear and comprehensive explanation.

ii) Future research to consider mixed study design with quantitative and qualitative approach in order to improve quality of the findings.

iii) Future research to use random probability sampling techniques, larger sample size and even comparative study design to allow valid and reliable generalization of the conceptual framework to humanitarian actors across countries with similar context to Jordan

iv) Future research to use the innovative valid framework based on quantitative and qualitative methods with larger sample size to allow statistical generalization of the research findings.

8.5 Conclusion

Information sharing refers to free flow and reciprocal data or knowledge exchange between organizational members. In the contemporary world, organizations continue to rely on cumulative knowledge from their employees, suppliers or customers as well as other key stakeholders. This practice is critical since it ensure that organizations gain competitive advantage (Bock *et al.*, 2007; Brown & Duguid, 2000; Small & Sage, 2006). However, effective information sharing requires free, timely and accurate information flow information among members (Childhouse & Towill, 2003; Li & Lin, 2006; Moberg *et al*., 2002; Rahman, 2004; Tan *et al*., 2002). Organizations should not only aim to achieve efficient supply chain but also competitive in order to increase performance. According to Li & Lin (2006), information sharing among the members or partners provides one of the approaches to achieving increased performance.

This research employed qualitative research design to ensure robust and holistic framework for qualitative data coding . Therefore, the researcher was able to identify themes in the dataset related to the research aim and objectives, and therefore analysis and interpretation of the findings on information sharing barriers of humanitarian supply chain (Chapter six). The design was based on pilot study (expert interviews) as well as multiple-cases study starting with development of the tools, examination of the cases and validation of the findings. The analysis employed within and across- cases approaches so as to answer the research aim and objectives fully based on concrete conceptual factors. Notably, the researcher generated abstract codes to each emerging theme from each analysis of all the eight cases based on which comparisons between and across cases were made to explain causes to information sharing barriers and the associated outcomes.

The holistic research design allowed the researcher to achieve valid, reliable as well as greater accuracy in the research findings and meaningful conclusions. This was arrived at based on thematic analysis of each case (Chapter six), followed by within and cross-case analysis (chapter seven) and eventually matching major findings to information sharing literature to understand the interplay of conceptual factors limiting information sharing.

Based on analytical generalization of the findings to information sharing relationships of humanitarian supply chain management, this study provides evidence-based information for humanitarian organizations in Jordan to develop better strategies for improved information sharing so as to achieve effectiveness and increased performance among the humanitarian organizations. Overall, the study enhances research factor, internal as well as external validity, and the overall research reliability.Generally , this chapter provides a summary of the key findings of the study,theoretical as well as managerial contributions and future research directions (Table 8-2).

Table (8-2): Research scope and summary of key issues

Scope	Summary of key issues
Research Title	Information sharing in humanitarian supply chain management: The Case of Refugees Crisis in Jordan.
Research Context	Information Sharing and relationship with Coordination, Humanitarian supply chain management.
Empirical Context	Case-studies of information sharing of humanitarian supply chain management in Jordan
Research Methodology **Key Findings**	Qualitative methodology of Eight multiple-case studies . The findings showed that the conceptual factors limit information sharing of humanitarian supply chain management in Jordan leading to poor relationships and coordination among humanitarian organizations which hinder humanitarian response.
Key Contributions	**Research Contributions:** **Knowledge Contributions** i. Identification of conceptual factors contributing to limited information sharing across humanitarian supply chain, in order to identify strategies to bridge the barriers to effective information sharing and coordination between humanitarian organizations for a better response. ii. Relationships between conceptual factors and information sharing of humanitarian supply chain management are further clarified. iii. The provision of an empirical evidence on limited understanding about logistical capabilities amongst humanitarian organizations across the supply chain, including the overall lack of or minimal information. iv. The study identified the importance of IS between humanitarian organizations. v. The study raised the awareness among humanitarian organizations about the need for effective and efficient management of humanitarian relief effort during disaster response similar to that in the CSCM business sector. vi. The study shaded light on information sharing barriers at horizontal level of humanitarian supply chain management and provide a knowledge base to academicians and scholars for their future research about HSCM practices plus service delivery. **Managerial and policy contributions (practical contribution)** vii. Provides insight for different humanitarian actors (donors,government and humanitarian organizations) to enhance levels of information sharing, strategies and effective mechanisms for better humanitarian response. **Strategic actions to bridge information sharing barriers**

	viii.	Strategic actions to bridge the information sharing barriers are suggested based on the link between existing literature of information sharing and conceptual factors that limited IS to ensure effective information sharing and cpoordination between humanitarian organizations for a better response.
Future research directions	i.	To explain conceptual factors separately to ensure clear and comprehensive explanation.
	ii.	To consider mixed study design with quantitative and qualitative approach .
	iii.	To use random probability sampling techniques, larger sample size and even comparative study design .
	iv.	To use the innovative valid framework based on quantitative and qualitative methods with larger sample size to allow statistical generalization of the research findings.

Source: Developed by the researcher.

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APPENDICES

Appendix 1: Comparison of Commercial and Humanitarian SCM

	Bussiness Supply Chain	**Humanitarian Supply Chain**
What is demand?	Products/Services	Supplies and people
Demand pattern	Relatively stable, predictable, demands occur at fixed location in set quantities	Demand is generated from random events that are unpredictable in turns of timing, type and size. Demands are estimated after they are needed based on an assessment of disaster characteristics. Demand pattern (degree of instability in CSCM much less than HSCM, beside irregularity and random events. In terms of size, type, timings (sudden of occurrence), and locations is a characteristics feature of demand pattern for HSCM (Beamon and Kotleba, 2006; Balcik and Beamon 2008). Demand determined after the disaster and after they are needed based on assessment of the disaster characteristics (Beamon and Balcik, 2008;Beamon, 2004; Trunick, 2005).
Supply pattern	Mostly predictable	Unsolicited donations
Strategic goals	Usually, to produce high quality products at low cost in order to maximize profitability and achieve customer satisfaction.	Minimize the loss of life and alleviate suffering.
Lead Time	Lead time determined by the supplier – manufacturer – DC – retailer – chain.	Approximately zero lead times between the occurrence of demand and the need for it. But the actual lead time is still determined by the chain of material flow.
Inventory Control	Uses well-defined methods for determining inventory levels based on lead time, demand and target customer service levels.	Inventory control is challenging to high variation in lead time, demands and demands location. Inventory control for humanitarian relief organizations can be more difficult than commercial enterprises. HRO has very short lead time, challenging inventory policies, and unreliable

		information flow to minimize suffering in the affected areas (Ihan, 2011). Also Commercial inventory management is a core logistic function which is dominated by "pull" systems. In contrast, disaster relief circumstances inventory first requires "push" into strategic locations before "pull" systems are implemented to get the precise area of need (Whybark, 2007). Inventory management in HR differs from CSCM in that "the time values of commodities are much greater than the inventory carrying costs" (Long and Wood, 1995). In the table I mean well defined methods that can be used to determine the inventory level.
Information System	Generally in most cases is well defined, using advanced technology.	Information is often unreliable incomplete, non existence or slow (Ihan 2011; Day *et al.* 2009). Limited funding for information technology in HRO (Whiting and Ayala-Ostrm 2009; Oloruntoba and Gray 2006; Thomas and Mizushima 2005), can affect information flow in HSCM (Leiras*et al.* 2014; Maspero and Itman 2008; Chikolo 2006).
Performance measurement system	Historically, focused on resource performance measures, such as maximizing profit or minimizing cost with measurement systems increasingly incorporating non profit dimensions. It is more straightforward than HSCM, since financial metrics are relatively clear and accessible indicators of performance. Profits are measured easily and are good test of market need satisfaction and an organization's ability to	Primary focus on output performance measures such as the time required to respond to a disaster or ability to meet the needs of the disaster (customer satisfaction) Performance measurement can be challenging for any kind of organization, and additional challenges exist when measuring the performance of non profit organizations (HNGOs) (Balcik*et al.*2010 ;Beamon 2004; Sawhill and Williamson 2001;

	operate efficiently (Kanter and Summers 1987).	Brooks 2002; Speckbacher 2003; Parhizgari and Gibert 2004; Micheli and Kennerly 2005) Challenges identified for performance measurement in non-profit sector include the intangibility of the services offered, immeasurability of the missions, unknowable outcomes, and the variety, interests and standards of stakeholders (Sahill and Williamson 2001).
Distribution network configuration	Well defined methods for determining the number and locations of distribution canters.	Challenging due to the nature of unknowns (locations, type and size of events, politics and culture).

Source :(Moore, 2000; Thomas, 2003; Beamon, 2004; Beamon. & Balcik , 2008; Charles *et al*., 2010, Ertem *et al*., 2010; Widera *et al*., 2013).

Appendix 2: Comparison of Research Philosophies

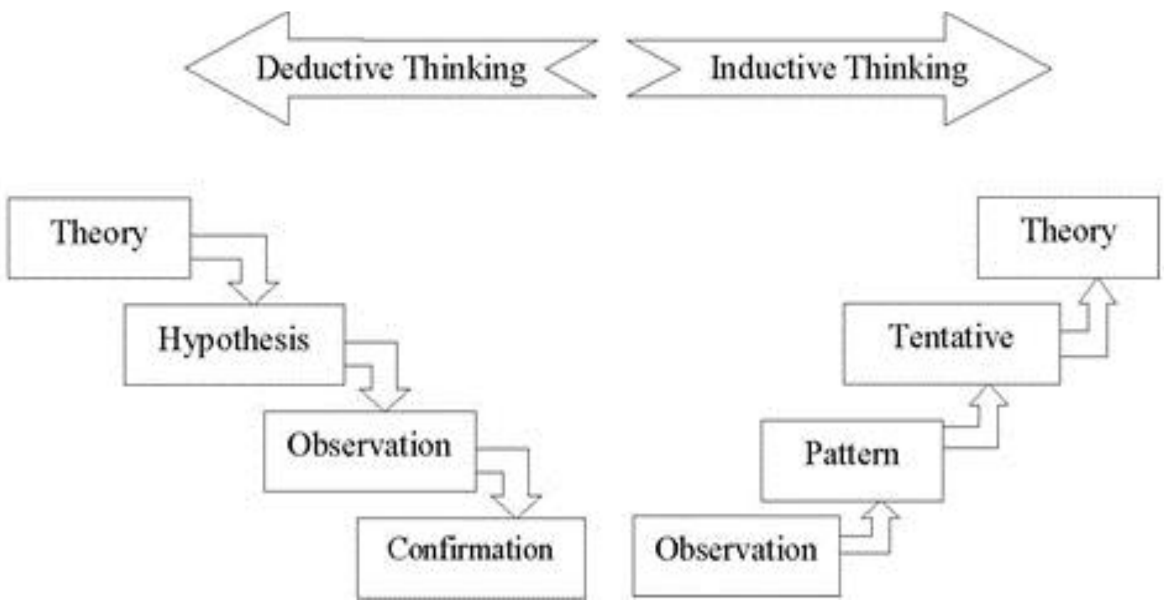
	Positivism	Realism	Interpretivism
Ontological "It is related to the nature of reality"	objectivism Independent of human thoughts and beliefs.	Objective. Exists independent of human thoughts and beliefs or knowledge.	Conscious awareness of the world as experienced from the subjective or first person point of view and believes that to be crucial to understanding the phenomenon being studied.
Epistemological "what constitutes acceptable knowledge in a field of study"?	Observable phenomena provide credible data, facts. Focus on causality and law like generalizations.	Observable phenomena provide credible, data, facts. Insufficient data means inaccuracies.	Subjective meanings and social phenomena. Focus upon the details of a situation and reality behind the details, subjective meaning motivating actions.
Data collection techniques most often used	Highly structured, large samples, measurement, Quantitative methods.	Methods chosen must fit the subject matter, Quantitative or Qualitative.	Small samples, in-depth investigation, Qualitative methods.

Source: (Creswell, 2013; Saunders *et al.*, 2009; Saunders *et al.*, 2006).

Appendix 3: A distinction between deductive and inductive approaches.

Induction Emphasises	Deduction Emphasises
Gaining an understanding of the meanings humans attach to events. The collection of qualitative data. A close understanding of the research context. A realisation that the researcher is a part of the research process. A more flexible structure to permit changes of research emphasis as the research progresses. Less concern with the need to generalize.	•Scientific principles. •The need to explain causal relationship between variables. •Moving from theory to data. •The collection of quantitative data. •A highly structured approach. •The application of controls to ensure clarity of definition •Researcher independence of what is being researched. •The necessity to select samples of sufficient size in order to generalize conclusions.

Source: (Saunders *et al.*, 2009)



Appendix 4: Inductive and Deductive thinking

Source: Adopted from Trochim (2001)

Appendix 5: Case Study Protocol

Case Study Protocol	
1.participants Information	
What is:	
1.participant name?	
2.participant education?	
3. Position level?	
4.humanitarian experince in years?	
2. Organization information	
What is:	
1.organization name?	
2.the organization location?	
3.organization establishment year?	
4.number of employee's at your organization?	
5. nervice type(s) provided?	
6.number of beneficiaries .you serve? (Yearly)	
3.Supply Chain Management	
3-1 What is the concept of supply chain management regarding the service you provide at your Organization? please explain with examples	
3-2What are the benefits of supply chain management activities at your Organization and with other humanitarian organizations?	
4.Coordination	
4-1 What is your understanding of coordination in supply chain management for the service you provide at your Organization? And how you coordinate with other humanitarian organizations? .Please explain with examples	
4-2 What is your understanding of information sharing in supply chain management?	
4-3From your perspective ,How can demand information sharing effect coordination between humanitarian organization?	
5.Information sharing	
5-1 How can your organization share demand information with other humanitarian organization? (methods of sharing information)? please give an examples.	

5-2 What are the barriers that face you organizations to share the information's with other humanitarian organization in the terms of - 5-2- a. Management level - 5- 2- b. Organization level - 5-2-c. Financial level - 5-2-d. Technical level 5-3 Would you like to add or explain any other barriers to inter –organizational information sharing?. ?
5-4 What are the actions that your organization applied or followed to overcome the information sharing barriers?.
6 Would you like to add or explain any related information?

Appendix 6: Pilot Study Protocol

1. Respondent Information	
What is:	
1. respondent name?	
2.respondent gender ?	
3.respondent education ?	
4.position level ?	
5. organization experience in years?	
2. Humanitarian Organization Information	
What is:	
1.organization name?	
2. organization location?	
3.organization establishment year?	
4.number of employee's at your organization?	
5.service types?	
6.number of beneficiaries you serve? /yearly	
3.Supply Chain Management in Humanitarian Organizations.	
1.What is the concept of service supply at your organization. ?	
2.Which types of demand your respond to at your organization .?	
3.What are the benefits of supply chainfunctionsat yourorganization .?	
4. Coordination	
1. What is your understanding of coordination in supply chain for a better supply response?	
2. How do you apply coordination within your, organization and with UN- NGO Organization and with other NGOs?	
3. What is your understanding of information sharing in supply chain management?	
4. What is the impact of information sharing on coordination?	
5.What are the types of information your organization share with other humanitarian organizations? please explain with examples	
6. What are the barriers of information sharing behind effective coordination between humanitarian organizations?	
7-What are the humanitarian organizations do to enhance information sharing ?	

Appendix 7: Case Study Covering Letter

University of South Wales

Faculty of Business and Society

School of Business

Pontypridd, Wales

CF37 1DL, UK

Tel: +44 (0)1443 654269

Fax: +44 (0)1443 480558

raeda-sa@hotmail.com

raeda.Saada@southwales.ac.uk

Dear Respondent

This case study aimed to understand the information sharing barriers in order to enhance coordination between humanitarian organizations for a better response in supply chain management. Your response is essential in supporting me to obtain a full understanding of this topical issue and provide recommendations for managers of Humanitarian organizations in .Jordan

The interview takes approximately 45 up to 60 minutes. If you wish to add any comments, please feel free to do so. The information you provide will be treated in the strict confidence. .You will notice that you are not asked to provide your name and address in this research

The findings from this case study will be used as the main data for my thesis for my degree .course, Supply Chain Management, PhD at The University of South Wales, UK

I hope you find completing the interview interesting, and thanks for taking the time to help me. If you have any queries please email me at (raeda-sa@hotmail.com) or contact me in Jordan at .+962 772273163. UK at 00447780275754

.Many thanks for your cooperation

Yours faithfully
Raeda Saada
PhD Research Student
University of South Wales

Appendix 8: Case Study Analysis (cases one to eight)

UN-Organization

Case 1

Key Theme supported by interviewee Quotations	
Managerial barriers (2 sub-themes)	**lack of staff skills and capacity building ,lack of trust.**
1- Skills and capacity building **Q1** "…but there can be specific skill sets around data entry…Because if you have to hire additional people to have that, then that costs more money that they may not have. So then the burden falls on the current staff who always have other responsibilities as well. And so that's where it can get challenging. It can get challenging across all organizations, *to* be honest. You have somebody resign or go on maternity leave, and suddenly you have a gap in the information sharing that needs to be picked on".Coordination officer **2- Lack of trust** **Q2** "Well, some of the biggest challenges we have around information is ensuring that all of the actors are identified and actively participating. Information that is coming out is only ever - information products if you like - that are coming out are only as good as the information that goes into them. So, if we have a program like activity info, and it doesn't cover, and you have only five organizations reporting instead of 10. But it doesn't show the whole story. It doesn't enable us to get the effectiveness of the complementarity."Logistis manager **Q3** "…when it comes down to it - if it comes to our partners, that's one thing because we know what they're doing - but when it comes to other food security activists who are operating independently, we just have to accept it as the data. To be honest, you can generally see where people are reporting and it's a bit weird Like if somebody reports that every month they do 1600 or like a nice round numbers, I never trust round numbers."Program manager **Q4** "I always see situations where around round numbers, it's like, "Why is it 500,000 and not 500,001?" Because it just seems too neat. If anything's too neat and tidy, I always start to get suspicious."Coordination officer **Q5** "…I mean, this is the trust and the commitment from other organizations to be a part of this information sharing. It can be a challenge."Project manager	
Organizational barriers (6 sub-themes)	**Availability and accessibility , power , lack insufficient resources for sharing information ,competiveness between organizations, Commitment of members and Security of information**
1- Competiveness between organizations code **Q6** "When it comes to information sharing, yeah, I guess it could be a factor but it's not something that I've seen."Field officer **Q7** "So, there are organizations out there who may not necessarily be reporting and sharing information. They're generally the ones who have their own independent sources of funding. So, some I know, go for country prince companies and decides to do an activity." Program manager **Q8** "There is always this issue of competition. A partner is trying to show credibility especially among NGOs to enable getting high score, to get more funding, there are always... those are the issues coming from competing between organization, trying to show credibility, trying to do resource mobilizations trying to convince the donors through what they do, what's good, what they can get from me." Project manager	

2- Insufficient resources for sharing information

Q9 "And that information sharing is often driven by human resources and do people have the money to have enough start to be able to put the quality data in. And for a small and jury it can be really challenging" Program manager

Q10"The only challenge would be is that how partners are balancing between their engagement in response and the humane thing documenting information to share. Because you need people to respond. It's an emergency and you don't need people to sit and write report and whatever. I think this is one of the challenges. How could the humanitarian agencies work us doing the response and the same time compiling information on the meeting readings and the details for those responses to share our information with everybody." Field officer

Q11"The second issue is the funding which is really challenging for all resources "Project manager

3- :Power

Q12 "…there's no kind of enforcement on sharing of information. If some local NGO says, "Well, we're not going to share.""Fine. Don't share." When it comes to enforcement, what it comes down to is, when we put in an appeal like we do on an annual basis, if you're not engaging in the information sharing and the coordination, then you can't" Project manager

4- Availability and accessibility

Q13"… in terms of the programmatic changes, very widely. Where we are restricted and managed very closely is in data sharing which is the personal information of refugees. So, anything around beneficiary list-- So we share beneficiary numbers broadly, we don't share beneficiary lists. Particularly because our beneficiary list is currently, like I said 535,000 people, it's a massive list."Logistics manager

Q14 "…they send us a list that we then say, "Okay, these people are getting full assistance et cetera." And when they send that list, we tell them to only send us the case number ID. So, without any other data or means, telephone numbers, et cetera. So, all that sharing of data is regulated quite closely with data sharing agreements." Project manager

Q 15"…we have strict agreements with them over the sharing of that data. We do have the partners who implement the other half, distribute their cards, et cetera. And so we do however share a limited amount of information with them as well. Basically, the minimum that's required to gather effectively informant background. Let's say like the golden rule when it comes to sharing beneficiary data."Coordination officer

Q16 "…We acknowledge that data has to be shared, for example, if you're going to go round and do a big research project, you need to be able to know who you're getting in touch with and what they use and all of that information. But we shared basically the minimum required to do whatever activity that is, and it's only with our implementing partners who have a signed agreement with us."Program manager

Q17 "…I think that the confidential sharing protocols - the way we share information within coding, et cetera - is really strong. And this is one worth getting back to the data protection challenges. It's having these sort of strong protocols around maintaining confidentiality, sharing encrypted files, et cetera." Coordination officer

Q18 "Really here, I think we don't really have massive challenges around the accessibility. When it comes to general information, that's no issues. When it comes to specific data, personal data, beneficiary data, we don't really have challenges because we have this over action data agreement which facilitates that process."Field officer

5- Commitment of members

Q19 "…I mean, this is the commitment and the commitment from other organizations to be a part of this information sharing. It can be a challenge."Project manager

6- Security of information

Q20 "We have no challenges in here when it comes to security information. There's nothing personal"Project manager

Q21 "It only comes to when there's a protection concerned, and part of that protection concerned is personal information, personal data. And that's absolutely fair enough."Coordination officer

Q22 "When it comes to general information, that's no issues. When it comes to specific data, personal data, beneficiary data, we don't really have challenges because we have this over action data agreement which facilitates that process."Program manager

Technical barriers (one sub-themes)	**Technology and overall information system (bureaucracy and manual supply chain)**

1- Technology and overall information system(bureaucracy and manual supply chain)

Q23 "The only challenge would be is that how partners are balancing between their engagement in response and the humane thing documenting information to share. Because you need people to respond. It's an emergency and you don't need people to sit and write report and whatever. I think this is one of the challenges. How could the humanitarian agencies work us doing the response and the same time compiling information on the meeting readings and the details for those responses to share our information with everybody."Logistics manager

Q24 "The second the IT is facing is they could not catch up with the entire firm because again the nature of the response. There is always some discrepancies, some information regarding the funding. Sometimes you get in kind, sometimes you get funding."Project manager

Q25 "IT capacity itself. Very rare to find IT specialists who would be very acquired to work on such issues because they are few of them trained on the field, preparing reports. Second is the pressure of the work itself. you have one person is working for a sector of a value over $200 million dollars. Is a one man show where you know there is lots of pressure for him to show that... Those are the kinds of the things that IT faces, their challenges"Program manager

Q26 "But then again it's about balancing between the response and documenting this response to ensure that they all come in time. There always be delays introducing up-to-date reports, right? This is the main issue, what might be the challenge of the IT when it comes to the operational related costing and so on."Logistics officer

Q27 "There is no any standard information management system. now we've talked about two information management system. One of the main challenges is how to make that two system to work together." Field officer

Q28 "the challenges related to the information is balancing between what is happening in the field result gathering and what happened at the headquarter of the organization. There will be always delays in putting information together nd the reports they always take some time to be produced to what is required."Coordination officer

Financial barriers (one sub-themes)	**Limitations of resources (people, IT, Knowledge information sharing to workers)**

1- Limitations of resources (people, IT, Knowledge information sharing to workers)

Q29 "The second the IT is facing is they could not catch up with the entire firm [,,,,] because again the nature of the response. There is always be delayes introducing up to date report,right , this is the main issue what might be the challenge of the IT when it comes to the operational related costing and funding. Sometimes you get in kind, sometimes you get funding." Coordination officer.

Social cultural and religious barriers (one sub-themes)	Limitations related to culture, religious etc.

1- Religious barrier

Q30 "we're working in the communities where there are very religious based whether Muslims whether Christians. Their issues related to cleanliness or issues related to taking more attention to the behavior change to reach their standards which are very expensive. Those are the issues culturally but not like the issue related to language or issue related to accessibility".Field officer

Inter –organizational Information sharing barriers in case study (1)

Key themes	Sub-themes	Categories	Code (issue addressed) In the previous table	Secondary Data
Managerial barriers	Skills and capacity building	Need for data management skills	Q1 Q2+ Q3 +Q4 +Q5	Lack of leadership skills(Mitri, 2014; Hall, 2013)
	Lack of trust	Ensuring participation by all actors.		
Organizational barriers	Accessibility and availability	Confidentiality & privacy .	Q6+Q7+Q8+Q9+Q10+Q11 Q12+Q13+ Q15+Q16+Q17+Q18+Q19+ Q20+Q21+Q22	availability, access and utilization of data.(UNHCR 2015).
	Security	Protection of information.		Insecurity and civil unrest (Syria Regional Response Plan 2014)
	Insufficient resources for sharing information	Lack of funds for quality data . Lack of funds. Delayed information integration during response.		
	Power	Self-reliant .		
	Competiveness between organizations	Fear of facing competition. Seeking recognition and credibility.		

	Lack of Commitment to sharing information	Commitment of members		duplication in areas where multiple actors are providing assistance(Syria Regional Response Plan 2014)
Technical barriers	Technology and overall information system (bureaucracy and manual supply chain)	Lack for funding Lack of IT expertise Delayed reporting /communication	Q23+Q24+Q25+Q26+Q27+Q28	
Financial barriers	Limitations of resources (people, IT, Knowledge information sharing to workers)	Lack of standard	Q29	lack of coordination and information sharing among humanitarians, due to the of funding . (Hall, 2013 , Schneider, *et al.*, 2016 ,data.unhcr.org)
Religious	High-cost services	Need for high standards of services	Q30	

Case 2

Key Themes supported by interviewee Quotations	
Managerial barriers(4 sub-themes)	**Lack of skills and capacity building ,lack of trust , Employee retention and Lack of motivation to use information**
1-Skills and capacity building **Q1** "We have trainers because we have the training center and we have coordinative program , project managers in the field all the time so it's still we need to be able to build the capacity of in putting the information in the importance of documentation I say again"Program manger **2- Employee retention**	

Q2 “Yes and no yes because a lot of good staff are being moved ….. by international donor they get much higher salaries so yes In that way and that the problem”Project manager
Q3 “I mean generally all of our staff know how to use you know computers an basic office and what not so it’s just a bit of orientation in the beginning how to use the share point but because it’s a Microsoft program the usually catch on quickly and it’s just after one orientation and they manage to use it and if they have any questions they ask the IT officer”Logistics manager
Q4“We need sometimes according to certain projects but usually our ITC officer can handle it.”Coordination officer

3- Lack of trust

Q5 “Yeah mean and our nature of works especially when were out in the field doing research you know we have to trust the researcher to make the right decision. It’s very rare that they don’t but usually we are do the best to prepare them enough. We have consultants, we have committees, we have to make sure that before we send the researcher out into the field they are as prepared as they can be”Project manager
Q6 “Actually now the information sharing in terms of information sharing itself is not a problem. The problem is the data compilation, the information compilation, make everyone feed into one place in order to share their information widely and use it. This is the main challenge, not the information sharing itself.” Program manager
Q7 **“**It could be as related to a specific issue but generally speaking it's no it's... Before humanitarian action it's by the end everyone is looking to see the beneficiaries and receiving equal assistance from different organizations in dignified way. So the trust is a principle, the trust is a principle in humanitarian action. No I don't, I don't see it, it might affect some relation between organizations but generally speaking if there is a body to coordinate the information sharing then the trust, the trust is there”Director manager

4- Lack of motivation to use information

Q8 “If you have the information it is easy to share and problem is after the information sharing how you can motivate the people to use this information to design their intervention and to monitor their intervention. This is the main challenge but in general of information sharing itself is not a challenge, the challenge is either before when you combine the information, collect the information...”Coordination officer

Organizational barriers(6 sub-themes)	**Structure of the organization , Accessibility and availability ,insufficient resources for sharing information ,competiveness between organizations , Commitment of members and Security**

1-Structure of the organization

Q9 “If were working together on a project yes but otherwise the people who do the coordinating are the headquarters not us. We don’t do coordinating between the centres. We work as partners with our headquarters on a project on something. But if there’s coordinating to be done it’s through seniors I mean the one who works at the headquarters.”Program manager

Q10 “I think when we get very busy it’s difficult to remind everyone to keep updating the system.” Field officer.

2- Competiveness between organizations

Q11 "It's not too much major factor actually because it's, the information that we have everything is available for everyone. So if you share the information it will be available for the public and it will help the others to act or to execute their projects rightly and even identify their needs accurately .but no I don't have have seen this between organizations they competitive whose have the important information".Coordination officer

3- Insufficient resources for sharing information

Q12 "…I think because of lack resources is I feel in documentations if you have how much time do you put for yourself to actually document the information a lot of the information I feel is in because had is rather than written so the written information is very difficult to come by unless you use to it from the very beginning you have strong system…"Project manager

Q13 "…..I feel it's because there is too much of lack of funding so competition ….. Coordination because lack of fund raising and put money etc. and who brings them together if you are talking externally and a lot of different tasks that I enjoyed in are international organization taking the lead there is not much of the local organization is taking the lead"Director manager

Q14 "Not just the funding the limited funding makes too competition, so that's lack of coordination at the external level internally its the time factor not enough time because you are in the field to coordinate with each other it's documentation in the importance of documentation"Project manager

Q 15"…the main barrier is there is multiple actors, many actors sharing information. Some types of information if it's not coordinated or of some types of information if it's just collected in uncoordinated manner, then it will come up with contradictory results and this is a challenge actually. So that's why we try coordinate the data collection within each sector at the earlier stage when they planned to collect the information…. the problem is its uncoordinated data collection of within indifferent areas. If it's coordinated then you have, we would, no you will have effective information given back to the sector and as well as to the partner. "Program manager

4- Accessibility and availability

Q16 "I think in Jordan the main thing would be knowing what information is out there which is again why we made our website to be an information platform because it's very difficult to know what research or what projects because all of the NGOs in Jordan they report to the donor." Coordination officer.

Q17 "the confidentiality of information within the health sector we don't have. The confidential issues is the things that related to the individual basis, that maybe a breach his confidentiality or bribery case. Normally, not normally no one is sharing this because it's the ethical consideration. So we don't share the individual's case information if you're taking, talking about individuals cases. But the general information related to the activities itself, the progress, the monitoring of different activities this is something not, we don't have confidential issues" Program manager

5- Commitment of members

Q18 "The main challenge is not availability of information the challenge is how much the partner are interested and committed to share this information. Sometimes you need to make some efforts in order to [xx] them, motivate them to share the information."Coordination officer

6- Security

Q19“ Sometimes with the government they are concerned, sometimes they have some concern about even sharing such information. And yeah sometimes we ask for information to be shared with this sectors in order to be used for planning purposes “.Coordination officer **Q 20**“ but they have their own concern and they consider it as a secured information and we did not use either. So sometimes the government due to this they don't share the information because they have some concern relating to the security of the organization.”.Director manager	
Technical barriers (2 sub-themes)	**Technology and overall information system , bureaucracy**
1- Technology and overall information system **Q21** “There is not enough of the funding organization or privet sector that will that’s another problem it’s they don’t see the value of that in sense of putting a lot of money for it so they have to raise all our different kind to bring in the CRS system but we did as an organization allocate from the money that we raise to …”Program manager **Q22** “Inputting all the data the mindset to being able to say this important as documentation getting all of the information out of people head then putting it on to computer…This is your responsibility organization … your organization responsibility to build information system …”Coordination officer **Q23**“I feel that doesn’t enough priority been giving to that from the funders I feel it still need strengthening”Program manager **Q24** “Like I said I mean getting people to share their information I mean definitely getting people to know more about this website but I mean the also the willingness to share.”Director manager **Q25** “I think the hardest thing is designing it and then making it a user friendly as possible… to make sure because your customizing something to fit your work so it’s not something that you can just take template and you know. So you know making it fit your work flow. So and then of course that comes as you use it and you update it you revise it so it comes with time.”Field officer **2- Bureaucracy** **Q26**“Now this now the technology is everything no need to send the data in all the or some information but maybe, maybe this is more with the government because not efficiently the electronic system”.Logistics manager **Q27** “their system and they don't consider it as an official way to share the information. So sometimes yeah we share the information in writing because it's the requirement of the government but for UN national partner, international partner we use the electronic measures to share.” Field officer **Q28** “Yeah it can be a challenge everywhere and different type of databases, different type of tools being used to compile the information and to share the information sometimes yeah it's not compatible, sometime.”Project manager	

Inter –organizational Information sharing barriers in case study (2)				
Key themes	**Sub-themes**	**Categories**	**Code (issue addressed) In the previous table**	**Secondary Data**
Managerial barriers	Employee retention	Staff turnover	Q1+Q2+Q3+Q4 Q5+Q6+Q7	large mobilisation

	Skills and capacity building	Training and experience	Q8	of "emerging" actors has been observed in Jordan (Sharp &Blanchard, 2013).
	Lack Trust	Ensuring right-decision making by staff Interagency information sharing		
	Employee motivation	Demotivated to use information		enforcement of the provision in terms of actions (Balsari *et al.*, 2015).
Organizational barriers	Insufficient resources for sharing information	Information sharing and coordination Lack of adequate staff Lack of funding Lack of time	Q9+Q10+Q11+Q12+ Q13+Q14+Q15+Q16 +Q17+Q18+Q19+Q20	Need to cash assistance, to fill gaps in other service provision and address needs (Syria Regional Response Plan 2015)
	Commitment of members	Management of data Commitment		
	Accessibility and availability	Information type and identification Confidentiality and privacy		limited access for unregistered refugees(Syria Regional Response Plan 2014)
	Structure of the organization	Protection of information		
	Security of information	Data protection		

	Competiveness between organizations	Fear for facing competition		
Technical barriers	Technology and overall information system	Inadequate funding Commitment to sharing information Designing user friendly system Lack of standard	Q21+Q22+Q23+Q24+Q25 Q26+Q27+Q28	varying results and do not fulfil the standards accuracy (El-Khatib *et al*., 2013).
	Bureaucracy	Partial uptake of IT		

Summary of information sharing barriers (Case 1 and 2)

Inter –organizational Information sharing barriers				
Managerial barriers	**Organizational barriers**	**Financial barriers**	**Technical barriers**	**Other barriers from your findings such as cultural ,language ,geographical ……etc**
a. Lack of trust b.Skills and capacity building c.Employee retention d.Lack of motivation to use information	**a. Insufficient resources for sharing information b.Competiveness between organizations c.Power d. Availability and accessibility e. Commitment of members f. Security of information g. Structure of the organization**	**a. IT barrier**	**a. Technology and overall information system b. Bureaucracy**	**a. Religious barriers**

International -Organization

Case 3

Key Themes supported by interviewee Quotations	
Managerial barriers (3 sub-themes)	**lack of, skills and capacity building ,lack of trust and Employee motivation**
1- Employee motivation **Q1 "**So international organizations may more than local government or so everybody wants to work with international organization... Because salary is higher. They pay more, and then you have people who once get into NGO sector they are really afraid to leave. They don't want to leave, because salary is good in international organizations."Project manager	

Q2 "First thing is salary, the salary is double and triple compared to local organizations. My colleague told me, I graduated from university in 2005, I started working in NGO few years, I earn 3 times more than my colleague who works for government."Program manager **2- Skills and capacity building** **Q3** "…at this stage we don't have enough information system and it's not very well I mean there is no very well instructor for this information system which leading us for providing our full capacity of services which is very important and what we need to focus on not only from our side but also from donors side they have to highlight and working in sharing information and coordination…"Project manager **3- Lack of trust** **Q4** "sometimes there is a problem with other supplier or NGOs in another location they can't talk about it in very honest way and this is create some problem for us and maybe for a different organization because the most important thing in this field is the experience if you have an experience in something and there is no much information you have from different organization it will lead for unsuccessful operation in this field …also some NGOs trying to hide the information from different organization maybe for their own benefit" Coordination officer	
Organizational barriers (5 sub-themes)	**Accessibility and availability , power and lack of regular insufficient resources for sharing information ,competiveness between organizations and Security**
1- Competiveness between organizations **Q5** "…there is always this challenge of how can I put it, being jealous and protective over information that you have. It happens all over the world you know, You have organizations that are dependent on donors funding and limited funding and then you have to think about your future. So, sometimes you are hesitant to share the information which you have because maybe your partner turn into your competitor you know." Coordination officer **2- Insufficient resources for sharing information** **Q6"** … It's very few coordination actually because as you know each organization trying to do the best for its own organization with their limited resources sometimes they are trying to hide information…" Program manger **Q7 "**…we have problem here with gathering some information due to several of obstacles itself sometimes from the field itself sometimes also from other partner …… other organization" Field manager **Q8** "…sometimes it's internal if there is no much sharing information internal in your organization this is will lead you to miss calculate or miss plan your procurement or you can't help enough other department to implement their work in the right to reach the successful they need to"Logistics manager **Q9**"…if we are providing the same services for sure their will coordination communication not enough coordination because as I mentioned before it will became like a challenging from the field who providing this services so this is one of the obstacles from our NGO or our organization to sharing the right information" Field officer **Q10**"…if we are providing the same services for sure their will coordination communication not enough coordination because as I mentioned before it will became like a challenging from the	

field who providing this services so this is one of the obstacles from our NGO or our organization to sharing the right information" Project manager **3- Security** **Q11** "…there is this other program which is working with health in South Syria. We are managing it from here but it operates in South Syria, and there we have to have valuable profile that you are providing aid, it should not be official, you cannot publish your ……not because its confidential but for the issues of security." Program manager **4- Accessibility and Availability** **Q12** "We don't share the documents that are related to personal files of our students. Those kind of information are kept under key, and so is information about their background and family status and any other personal information we don't share things". Coordination officer **5- Power** **Q13**"But I think that there is no written policies, but it is left to us, implementers of the program. Its up to us to judge what is danger and what is competition or what not. So far, I was not in a position where I had to think twice as to whether I should share some information"Program manager **Q14 "**…since we don't have any written policies it's personal evaluation and judgment that it comes to how person and case to case the approach and the information you are sharing." Logistics manager	
Technical barriers(2 sub-themes)	**Technology and overall information system and manual supply chain**
1- Technology and overall information system **Q15** "In this NGO there is still a week information system and staff…… very well we trying now to develop new information system which connect a different department with each other so we are all can use and be more useful information from different type of organization so we are working on this with headquarter and different NGO location and offices we are collecting enough information from different offices to build the very useful and enough well build information system to help us implementing our work"Coordination officer **Q16 "**This is what the problem that the donors doesn't provide full , they don't pay full attention for the important of the information system what they care about only to deliver the services for the benefiter's but they are not highlighting or prioritizing the information in the structure because it's very important to build and invest an information system which lead to more successful operation…"Program manger **Q17** "…this consider as challenge because we don't have full information system or very well info structure for information system will help us…. For sure effacing our decision and our operation in general and this what we need for …. I think for IMC to have very well build information system to help us taking the right decision and to help us for planning in the future for our programs and for our organization" Logistics manager **Q18**"This is the problem sometimes if you have a weak organization who can't provide you with enough information or the needed information it will be an obstacle and it will be difficult for you also because in this case you need to collect information for you and for them …" Project manager **Q19** "We have a very basic issue now because there is no internet connection inside the camps for at least the last 3-4 months… We still don't know what is the problem. There was internet	

until late December and then some problem started so we don't know what exactly is happening here. Inside the camp there is a base camp. That is where all the organizations are working, it is linked to the area and there is internet in that area…" Fiel officer **Q20** "…we are now dealing with a very basic issue of no internet access and communication is really important for us, especially since we are located in ,,,,, Amman. Maybe they field overseas or Jordan, but they still have to communicate with their main office in Amman, so you know internet is very important for us. And when you have internet, you should have basic communication over the email" Logistics manager **Q21** "…we don't have unified platform to share these stories and people write stories and everyone is trying to brag how we are doing great things" Coordination officer **Q22**"…we are trying our best to do our own information we don't have now information system but we are gathering information and trying to build from our own resource our own information system". Program manager **2- Manual Supply chain** **Q23"**Yes sure we have challenges and obstacles …. From the field and from supplier we are dealing with sometimes supplier you are dealing with they didn't understand the full concept of humanitarian organization and this type of miss understanding or let's not understanding the humanitarian field will caused for us difficulty procuring or delivering our services" Field officer	
Limitations of resources (people, IT, Knowledge information sharing to workers)	
Language barrier(one sub-themes)	
1- Communication barrier **Q24** "Its not standardized how you share information, we don't use same language (terminology) to describe certain things databases I mentioned to you it is very difficult for us to understand the information put in. What is meant by that, and what else would be there to share information…" Coordination officer **Q25** "…language barrier is another barrier , for me not speaking Arabic, for me the most important information comes from ministry of education and everything is in Arabic. When we are talking about these issues of Transgender, the new teaching methodologies, everything is in English and then my staff cannot read so it has to be you know like somebody who is excellent in education and is delivering training to our staff…" Program manager	
Socio-cultural and religious barriers(Culture, tradition, religion and corruption)	
Socio-cultural and religious barriers(2 sub-themes)	
1- Culture, tradition and religion **Q26** "Its culture, tradition which is here for 2000 years or even more, so they are raised in this culture. If you are raised as a child in this culture, you are raised as a religious person, religion tells you don't question, just follow… parents tell you don't argue with me, I am your father, I am your mother and then you go to school and teachers are like, I am your teacher you don't argue with me. So how can you expect somebody's with this. To raise questions, I don't agree, I have different opinion. You need hundreds of years to change this"Project manager	

Q27 "you go from house to house and from shelter to shelter and then you ask , International NGO , we are providing education, Biology, Science. So they say oh! That's really great and nice, but our children are already going to NRC, other NGO for example. Or say for example they will say we will send our children and then first week you have children and next week you see instead of 300 children you have 15 children in class and then you say why what's happening and then they say the teacher that you recruit, she is not a good women".Field officer **Q28** "Domestic violence, there is domestic violence here and if the child sees father hitting mother then this child cannot be very good in the school, they have traumas and we need information about that, how can we discover that? We have psychologists but again its traditional cultural barrier."Program manager **Q29** "…people would speak more about their problems or husband hit me and asked for divorce. Would you do this here? No you don't discuss about problem from house, it's between me and my family and nobody here discusses it. And it's my husband's right, he is head of the family…"Project manager **2- Corruption** **Q30** "Corruption, corruption is same in my culture, you don't consider it as corruption… so it's same here in middle east, if you help me I will help you in future and that's how things work" Project manager **Q31** "No, and that comes from education from western capitalistic idea of copyright, that I have information and I will get money for that and if you need my information you need to pay." Coordination officer
Quality barriers (Time, relevance etc)
Quality barriers (one sub-themes)
1- Relevance of information
Q32 "Some information is irrelevant …" Logistics manager

Inter –organizational Information sharing barriers in case study (3)				
Key themes	**Sub-themes**	**Categories**	**Code (issue addressed) In the previous table**	**Secondary Data**
Managerial barriers	Skills and capacity building Employee motivatin Lack of trust	Need for system manager/Instructor	Q1+Q2+Q3+Q4	lack of knowledge of services (El-Khatib *et al.*, 2013). development of longer-term

				relationship to strengthen trust between humanitarian aid response (Syria Regional Response Plan 2014)
Organizational barriers	Insufficient resources for sharing information Power Competiveness between organizations Security Accessibility and availability Employee motivation	Limited/inadequate coordination Lack of capacity to gathers/share information Lack of policies to facilitate information sharing or direct information sharing Fear for facing competition Protection of information Confidentiality and privacy Staff turnover	Q6+Q7+Q8+Q9+Q10+Q11+ Q12+Q13 + Q14	lack of decision-making power there is a very large humanitarian organizations, operating in Jordan long term strategy, it must be established quickly, (Yazgan, *et al*, 2015). availability of the necessary information to inform strategic planning processes(Syria Regional Response Plan 2014)
Technical barriers	Manual supply chain	Lack of honest due to manual work	Q15+Q16+Q17+Q18+Q19+ Q20+Q21 +Q22+Q23	

	Technology and overall information system	Lack of technology-support system Weak information system and staff Lack internet connectivity Lack of donor support Lack of common platform Difficulties in procurement and delivery		
Quality barriers	Relevance of information	Accuracy of information	Q32	lack of clarity on procedures for the data(Yazgan, *et al*, 2015). .
Socio-cultural and religious barriers	Culture, tradition and religion	Cultural, traditional and religious practices Corruption	Q26+Q27+Q28+Q29+Q30+ Q31	case management and psycho-social support services, there are still gaps Syria Regional Response Plan 2014)
Language barrier	Standards	Lack of common terminologies and language	Q24+Q25	

Case 4

Key Themes supported by interviewee Quotations	
Managerial barriers (2 sub-themes)	**lack of staff experience , lack of skills and capacity building .**

1-Staff experience

Q1 "I guess experience help so on so, you know, if you have the--a new clubs that have been coming in and they give them responsibility they don't always know how long these questions of; what can be share or shouldn't be shared, what's personal information and what should be kept secure, what should we be very willing to share because it helps the community. So that can become with experience and, yeah, there's old labors kind of groups ,kind of works…"Project manager

2- Skills and capacity building

Q2 "Training is at the same situation, and latest software again is a challenge and the HR system because these are not funded by the donors so we have to build in our own … Our staff are capable but they need to be trained they need to be updated and they need have their capacity build all the time but this is again another gape"Project manager

Q3 "In Jordan specifically there's a lot of data as a--like I think I get a new report that looks very glossy and nicely published from the agency once every week. So there's no shortage here in the information. I think just the challenge in NGOs now have is...How is it condensed enough to make it something that you can usually understand or just make decisions or rather than nothing" Program manager

organizational barriers(3 sub-themes)	**Availability and accessibility ,insufficient resources for sharing information and competiveness between organizations**

1- Competiveness between organizations

Q4 "Because there is the level of competition sometimes and not all information sometimes given because of this competition thing so you would receive certain information …. Certain level of information at these meetings or probably not everything … so we try to coordinate as far as we can but it's not like I wouldn't say it a perfect scenario …… each manger have in term of coordination"Program manager

Q5 "The challenge we face in the camps despite all these meeting and working groups remains the coordination between implementing partners and because … there is always this competition component there …. So you will not get everything …"Program manager

Q6 "competiveness so like every agency also is trying to sustain themselves and so I think, you know, for us we'd like to try and share information that enables others to serve beneficiaries better.But I get frustrated also at people's protection of their information in order to serve themselves."Coordination officer

Q7 "It could be probably just for the reason I mentioned as to why the people want to hold it for their own purposes and less willing to share because of the competition." Logistics manager

2- Insufficient resources for sharing information

Q8 "…because of the lack HR and IT system there is a lack of coordination we want have family receive the same supplies from 3 different NGO's and and some of them will actually end up selling those this extra…" Project manager

Q9 "Still coordination between humanitarian in Jordan you can say in the early stages very challenging and there are few coordination …And would be a lot of savings than if proper coordination mechanism were putting in …"Coordination officer
Q10 "Because somehow not having this information system in place means you don't have a clear information flow information to the staff so dominate any staff member would feel that more sold place they can go to with probably a little increase of salary they would immediately move on …" Field officer
Q11 "I mean we do have the whatever it takes like the server the computers but honestly because we are tight with budgets and we are receiving funds from different donors we can't go as broad as we wish to it's pretty tight our laptops for example are not up to the standards we end for we are trying to manage but it's not as good as we hope…" Coordination officer
Q12 "No, they do not because they expect you to vender in structure and as NGO recipient funds from donor we don't have that much to lay on…" Propgram manager
Q13 "the bigger challenges that the expectations of how fast NGOs are expected to respond and deliver. So just be of assistance is so quick. So just that factoring in your collection of data and transforming that into usual information is just like another challenge" Logistics manager
Q14 "I think the key is this is developing the right tools that are usable, you know, that will I guess take NGOs two hours to complete every month…So that's a problem right now. And then that would really help for the big coordination." Coordination officer

3- Availability and accessibility

Q15 "I'd say also a major consideration is just like data security where you're willing to share or you're not willing to share. So if it's like personal beneficiary data and--then, other than that the barrier it's just--you know, it needs to be a strong consideration in how you store data, how you share." Coordination officer

Technical barriers(one sub-themes)	**technology and overall information system (bureaucracy and manual supply chain**

1- Technology and overall information system

Q16 "Well , we don't share information with other NGO's and if we have to share information with other NGO's , there are certain information sharing protocols in placed at both sign on. But these protocols with insure data is kind of compared it to my NGO is sensitive can't be further shared it's a respective and …No information sharing ….We do share this information with our donors our donors for example the UNHCR if you go to their portal now, you will see that they have a monthly fact sheets that they produce part of it you will see the health sector the figures there are fed by us…" Coordination manager
Q17 "But even if other NGO ask for information , if we have signed the information sharing protocol with them we would provide if we haven't we would not provide it. Now there is one we prepared UNHCR but agreed until the moment.. No it been discussed but when we sign that means we can share information among these partners but otherwise we only share with the donors not with others …" Project manager
Q18 "…the challenge with our information system is that the indicators remain un unified between all donors so what we are trying to do is that we are trying to unified all kind of indicators all different donor in order to avoid any duplications because maybe you have the different naming of all indicators but at the end of the day it is the same count that what you are trying to count so

what you would end up with duplication so organization up to data being collected against all different donors is what we are trying to enforce currently"Program manager
Language barrier(one sub-themes)
1- Communication barrier **Q19** "Yeah,I think, yeah.I think those people <u>that don't speak the language and then that would be a challenge for sharing information." Field officer</u>

Inter –organizational Information sharing barriers in case study (4)				
Key themes	**Sub-themes**	**Categories**	**Code (issue addressed) In the previous table**	**Secondary Data**
Technical barriers	Technology and overall information system	Lack of inter-agency information sharing unlike donors	Q16+Q17+Q19	
Managerial barrier	Skills and capacity building	Lack of relevant training	Q1+Q2+Q3	lack of specialized programming(www.data.unhcr.org)
	Staff experience	Impact of staff experience on information sharing		
Organizational barrier	Competiveness between organizations	Fear of facing competition	Q4+Q5+Q6+Q7+Q8 +Q9+Q10+Q11+Q12 +Q13 +Q14+Q15	
	Availability and accessibility	Confidentiality and privacy		
	Insufficient resources for sharing information	Coordination and information sharing		the services are not sufficient neither in breadth due to insufficient resources(Francis, 2015).
		Lack of HR system		
		Lack of donor support		

		Delayed information integration during response		
Language barrier	Communication barrier	Lack of common langauge	Q19	

Case 5

<table>
<tr><th colspan="2">Key Themes supported by interviewee Quotations</th></tr>
<tr><td>Managerial barriers (one sub-themes)</td><td>lack skills and capacity building .</td></tr>
<tr><td colspan="2">1- Skills and capacity building
Q1 "Of course <u>they needs a lot of training for each department</u> based on request actually also for example I need training for analyzing data because I don't how to do that actually before I took this training…" Program manager</td></tr>
<tr><td>Organizational barriers(5 sub-themes)</td><td>1- Structure of the organization , power , Accessibility and availability ,competiveness between organizations and Employee motivation</td></tr>
<tr><td colspan="2">2- Structure of the organization
Q2 "Yes, but as me directly no coordination I receive list from AC or project manager….there is sometimes people assist the same service from different NGO's …so other household didn't receive any thing … <u>Maybe because the NGO's don't follow the right procedures</u> …" Program manager
Q3 "…maybe the sensitive data like the M&E department is not supposed to share with me. In <u>that case lack information on that particular area..."</u> Logistics manager
3- Competiveness between organizations
Q4 "Maybe I don't want to show <u>my partner who is a competitor that I have got this</u>, this funds from new donors, because I don't want them to contact these donors for the same."Project manager
4- Power
Q5 "…with NGO inside or even <u>outside and actually it's not allowed to meet and share directly I have to go through the coordination</u> …. Coordination can share, it It's not a problem we have to make this information not offer to everyone but of course any NGO's asking for the information for some level yes we can share it and other NGO's understands that we can't share everything…"Project manager
Q6 "…It's not much about not wanting to share information, it's about feeling that I have hegemony over this, <u>so I don't need to tell you what I have done, what I have not done</u>, you know. These things can happen…"Logistics manager
5- Accessibility and Availability
Q7 "…because the benefiters information something confidential you don't share with anyone even the data base has password…<u>I can't share for example their even the address because they</u></td></tr>
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<table>
<tr><td colspan="2">are refugees and they have tensions so they don't like to share these information"Coordination officer
Q8 "See now when we talk about partners, it's a different aspect, because we are not obligated to share each and every detail with our other partners, and as much as we are obligated to share these details with UNICEF. Because UNICEF is funding our projects, so they are the main partners. So UNICEF requires very strict reporting from us, obviously, because it is because of them that we are being able to run our program and the money is coming from them."Project manager
6- Employee motivation
Q9 "…we have this much of work turnover sometimes it happens because NGO doesn't have constant work and everyone lose their job so yeah sometimes people resigned just because they find better job like governmental job …I mean myself I am looking such as this job ,and even here …lack information on that particular area...". Coordination officer</td></tr>
<tr><td>Technical barriers(2 sub-themes)</td><td>Technology and overall information system , bureaucracy and manual supply chain</td></tr>
<tr><td colspan="2">1- Technology and overall information system
Q10 "… sometimes for example we need a place where we can store this huge amount of information other than my desktop … because really need the server this is what we are being asking for long time … the server I can do back up for my data base , data base it's most important thing because this data base we put everything even the type of assistance we give in the data we give this assistance so this for example anything happen to this data base we lose it" Field officer
Q11 "We do have USB but USB it's not really helpful, flash memory, we ask for external the external is like the device we connect it to my computer and we back up, the server is most confidential thing…" Coordination officer
Q12 "No they are looking for the quality of the service and what is the process to reach this quality mostly but no to build information…" Program manager
Q13 "Yeah, that's a natural thing. I'm sure that can happen. You're writing a report and you report gets lost, or that there is no system recovery."Project manager
2- Manual Supply chain
Q14 "Not really because sometimes you have to do the assessment for the …..Children are number …. Sometimes they go to visit them because we have their location on the system …..But lately we didn't face this problem that much actually because we do the assessment and we start immediately and manually to give the assistant …" Logistics manager</td></tr>
<tr><td>Quality barriers (one sub-themes)</td><td>(Time, accuracy and relevance etc)</td></tr>
</table>

1- Relevance of information **Q15** "But for me what is more important, is not just the information we are giving, it's about what kind of information. Because sometimes what happens, that when you have identified success stories, okay, in order to get more funding, people just end up, say for example we are in education, we only end up showing success story of how many kids passed, these many kids were successfully , these many kids you know passed from our center last year, so much improvement in education. But then it just becomes more monotonous and boring because it's just one kind of information." Program manager **Q16** "I feel information has to be diverse, even if we are working with education, it's not necessary that all success story has to be about education. Maybe through education somebody got a scholarship and went abroad, and became like a big doctor. Changing the life of that person can be another success story. Maybe because of education that some girl received in our center, she managed to escape child marriage by convincing her family I don't want to get married…So information is so diverse. For me it's not simply information, but the content of the information"Project manager **Q17** "The quality, I mean the time to share information, the time. My organization and your organization, there is a delay. You need information at a certain time, and this delay or the information is not as you would, not delivered." Coordination officer **Q18** "Yeah the completeness of the information is definitely an issue, but that is an individual initiative. You have to make sure that you are looking at all kinds of data to arrive at a conclusion." Field officer **Q19** "Yeah, so your ambition that sometimes , you will maybe show more numbers, or maybe you will show less numbers, you know, so these kind of corruption in numbers can maybe happen, or obviously it does happen, you know." Program manager **Q20** "…uncertainty in your reporting. Say someone was monitoring an evaluation can say all 500 volunteers received their payment. But maybe only 400 received them…So I feel sometimes information is not exactly correctly represented"Project manager **Q21** "It is a challenge the quick response of the information. But it is not something that happens all the time. We can't generalize these things." Logistics manager	
Socio-cultural and religious barriers(2 sub-themes)	**(Culture and tradition, religion and corruption)**
1- Culture and tradition **Q22** "…sometimes you know, we have some gender based violence issue so, because it is a culturally sensitive topic, and you know for a lot of people here it is natural to get beaten up by the husband. We are not going to talk about it. So culture barrier is a very, very big barrier to providing effective communication."Field officer **Q23** "…communication it is a very dicey situation when you are in a culturally complex environment. Because sometimes you know there is injustice happening, but you need to inform the larger society about it, knowing that the society doesn't care much. So cultural issues, cultural barriers are my biggest challenge."Program manager **2- Corruption** **Q24** "…there are issues of corruption. I'm sure that can become a barrier to good information of sharing." Logistics manager	
Language barrier (one sub-themes)	**(Terminologies and communication language)**
1- Communication barrier	

Q25 "<u>The language barrier, a lot of things get lost in translation</u>. For me, my biggest handicap has to be not to be able to speak in Arabic, because I am sure I could do much more to capture the essence of some things more than the other. But language is a huge barrier." Field officer

Inter –organizational Information sharing barriers in case study (5)				
Key themes	**Sub-themes**	**Categories**	**Code (issue addressed) In the previous table**	**Secondary Data**
Managerial barriers	Skills and capacity building	Lack of data management skills	Q1	Increased awareness and ore skills for the worker
Technical barriers	Supply chain	Need assessment and distribution of supply	Q10+Q11+Q12+ Q13+Q14	
	Technology and overall information system	Lack of back up system		
		Lack of donor support		
	IT	Lack of recovery system		
Organizational barriers	Structure of the organization	Lack of effective policies to facilitate information sharing and coordination	Q2+Q3+Q4+Q5+Q6+Q7+ Q8+Q9	some mistakes made in developing and pursuing an inclusive institutional environment (Mitri, 2014).
	Accessibility and availability	Confidentiality and privacy		Need to Increase access to services information
		Lack of accountability		
	Power	Lack of policies to facilitate information		

		sharing or direct information sharing		
	Employee motivation	Staff turnover		Although there have been similar doubts and predictions yet it seems that due to lack of coordination and information sharing the overall humanitarian response was poorly directed (Zyck, 2013)
	Competiveness between organizations	Fear for facing competition		
Quality barriers	Relevance of information	Subjective content	Q15+Q16+Q17+Q18+Q19 +Q20+Q21	Reporting and information gathering services and a need improvement
		Timely information		
		Accuracy of information		
Socio-cultural and religious barriers	Cultural, traditional and religious practices	Lack of effective behavioural change communication	Q21+Q22+Q23+Q24	cultural impediments to disclosure.
	Corruption	Corruption practices	Q25	
Language barrier	Standards	Lack of common terminologies and language		

Summaries for International Organizations (Cases 3, 4, and 5).

Inter –organizational Information sharing barriers			
Managerial barriers	**Organizational barriers**	**Technical barriers**	**Other barriers**
a. **Skills and capacity building** b. **Staff experience** c. **Lack of trust** d. **Employee motivation**	**a.Structure of the organization** **b.Competiveness between organizations** **c.Power** **d.Accessibility and availability** **e.Employee motivation** **f. Insufficient resources for sharing information** **g. Security**	**a.Supply chain** **b.Technology and overall information system**	**a.Quality barriers** **i. Relevance of information** **b.Socio-cultural and religious barriers** **i. Corruption** **ii. Culture, tradition and religion** **c.Language barrier** **i. Communication barrier**

Local -Organization

Case 6

Key Themes supported by interviewee Quotations	
Managerial barriers(Two sub-themes)	**Lack of donor confidence, lack of trust**

1- Lack of trust

Q1 "I will tell you something, I trust you as a person, but you present a side of the NGO. Okay, I trust you because of some kind of trust thing. But if you leave, and this is rare, There is deliberations, there is something called confidence building measures." Program manager

2- Lack of donor confidence

Q2 "It's just understand that Jordan health aid is like local national international NGO sometimes they doesn't our capacity of implementing really to understand that our society have the capacity and to implementation it was faces us before that the other donor did not expect that Jordan health aid have the capacity and the professional staff to implement such project , certain project for example it was a big challenge for us to make them believe that we are fortunate …" Project manager

Q3 "…sometimes a new organization or a new donor doesn't like understand our nature of work for example this one ….sometimes it happens okay …. So we tell them like our guide lines our nature of work and how we sometimes and we meet sometimes to know like those…" . Program manager

Organizational barriers(6 sub-themes)	**Structure of the organization , power ,insufficient resources for sharing information, competiveness between organizations, Power and Staff motivation,**

1- Structure of the organization

Q4 "…sometimes this is what we try to avoid in these meetings to avoid duplication of services for example or …. This one this is what we discuss in the meeting to avoid duplication of the same service for the same target populations this is one of the challenges maybe it's include but this is why this kind of coordination meeting is existed really to identify the gaps and needs and to let each like organization work in different field and the other so there is two duplication of service" Logistics manager

Q5 **"**There is sometimes no coordination and sometimes like some organization provide the same service for the same benefiters…This what we discuss in our workshop sometimes there is like some organization provide sometimes input assistance for the same family two times for example .. but this why the UNCHR for example established like group meeting for each sector ….to join and set down in around table to coordinate with each other to avoid duplication services" Coordination officer

Q6 "…there is sometimes NGO comes and provide some food assistant or cash assistant …… without coordination for work program but providing food and cash assistant for like refugees it happens but for camp this coordination is tight and working well so no duplication of service if each NGO's how to deal with it if he has like complicated like case…" Project manager

Q7 "Yes coordination is very necessary between implementing partners and donors to avoid the duplications we were discussing that there is no coordination sometimes in the field in the governor between governor and NGO's for examples so they have like a lot of NGO's focusing on implementing the same services in same area where has lots of area was not having no services" Program manager

2- Competiveness between organizations

Q8 "It depends on what kind of information you're talking about. What kind of information are you talking about? If it's financial information, then of course each organization will have its own secure and they completive each either , but if you're talking about, if you want to work in the field, you have to share." Logistics manager

3- Insufficient resources for sharing information

Q9 "No there is no kind of like sharing this kind of data except in sector level meeting yes this is the sector level meeting and if there is a need to share the information sector level yes … but randomly for any other donor that working… because sharing data in the sector level means like better performance if there are sufficient resources and better opportunities and better distributional services which is in many times very rare for example and we are on the same round table and the same field" Project manager

4- Power

Q10 "Well sometimes, people think information, keeping them in power, so having it means this is happened in the beginning of Syrian process, uh, each JordanianNGO would have like 200 names of beneficiaries, and they refused to share with other NGO's because they thought that they are, if they have this, they can get more donations from other NGO's." Logistics manager

Q11 "…they do not share. But, what they did is, the Syrian's would go to this, and that and that. I discovered this, I distribute some kind of distribution, in-kind distribution in Amman, and then after two days I did not it in Nagar, the same guy who came to Amman also came to Nagar, I said sir I know you came to one and the same name, so people tend to, Syrian's would register with all of them, and people thought they did not want to share the list of beneficiaries, except for because they can get more donations, more funding for them" Project manager

5- Staff motivation

Q12 "The turnover is existed but it's like for me it's acceptable in terms of number or percentage this is not high okay its acceptable but each staff want to improve his self he want to go to better opportunity, better experience more experience different experience we find it's acceptable in this kind of term for we my department we need to motivate staff to share ,there was not high turnover really in my department it was mostly very stable specially with the key persons in that aspects" Program manager

6- Accessibility and availability

Q13 "It's not for public, it's for private, because this is the laws , you never share the names of beneficiaries with outside vendors." Field officer

Q14 "Yea, some of the information that is given to you by other organizations which you signed with them a contractual debt to keep secrecy the names of the beneficiaries and then you can ask me for the beneficiary names in this area, so you know, I can't tell you that, because the source came to me and they requested that this information not to be shared, so I cannot share it." Coordination officer

Technical barriers(2 sub-themes)	**Technology and overall information system and Manual supply chain**

1- Technology and overall information system

Q15 "We did find some challenges with another organization, when your servers are down, sometimes the database is lacking something, accessibility to certain information, yes we did find this, but after meetings, of course meetings, and things like that, we've overcome it, hopefully. Sometimes even when we do an AE test, or we do case photo, but we have these tablets and we send this new items that we send out to UNHCR or to other organizations, we have some problems, but then we improve them and we overcome"Coordination officer

Q16 "…sometimes the implementation of these system it takes time because you want to implement this kind of these system the system is new and like any other software when you committed sometimes you have to have the time to train and implement the system and sometimes there…there is you will find that there is some kind of gaps and need to develop and added to the services and of course you have to implement these kind of software implemented In the field during like and you can't during the work so you can't stop the work and say that I want to implement this … and have to take kind of people and staff" Field officer

Q17 "…we have implement this work application system but work in for anytime or with any area that's having internet even though if is not internet it's uploaded to the software and then when you have a network its can be according automatically … but in the emergency sometimes we have to work sometimes with like with some kind of format that you can implemented but in the emergency if you go like outside …. You have to implement something like this truly sometimes will not help you yes…" Project manager

Q18 "…you need to like spend more and more time and money also to update your system , to create a new system to train your staff , building capacity , capability, always you have challenges

for that …. But also we feel that in we are like working in like a fix steps toward implementing the system and …. And before one year we didn't have this clinical data management system in the clinics and we developed by our self by our staff yes , we build our softer we didn't ask any company softer to come to develop and establish this kind of software…" Program manager **Q19** "…donors must focus on information technology to support their decision of also and to make them give them a quick view and also strategic view when and how to implement their subject plane…" Coordination officer **2- Manual Supply chain** **Q20** "…Any task ,For example the ….. Failed down in any of our clinics what you have to do manually you to think after the box sometimes…It's a usual responsibility"Project manager **Q21**"…sometimes there is challenges okay it comes to you there is nothing like in our task or in our work is routine and manual thing really everything is different, everything is different the situation is different, cases is different, yes there is nothing the same book" Logistics manager **Q22** "For the system we have like guide lines we have guide lines we have warehouse guide lines we have pharmacy guide line we make this guide lines to make the thing like if you don't know to the book for examples, but every manger does not like found this case is odd and need some advice how to overcome or solve it he comes to me which is mostly done manually…" Coordination officer **Q23** "Yes effective of course effective but it's not routine and manual ,that you have to come through the office in daily bases to do one two three four five for example the most difficult sometimes is like to manage people to manage staff sometimes to manage cases easier than to manage staff because every staff like you have to deal with them in different manner, there are not all in the same manner you can deal with them so management for me I think for me the most challenging thing is how to give view to the staff even the smallest to the manger yes you have to be small like with small staff and you have to be big with manger for me this is my philosophy …" Program manager	
Quality barrier (one sub-themes)	**Untimely information sharing**
1- Untimely information sharing **Q24** " Yea, we have some delays sometimes, which affect the implementation of the program. Yea, of course we have delays. We have the human factor, sometimes you are overwhelmed, they don't have, you know…" Coordination officer.	

Inter –organizational Information sharing barriers in case study (6)				
Key themes	**Sub-themes**	**Categories**	**Code (issue addressed) In the previous table**	**Secondary Data**
Managerial barriers	Lack of trust Lack of donor confidence	Challenges in winning donor confidence	Q1+Q2+Q3	Need to improve opportunities for confidential to

				improve multi-sectoral response services,
Organizational barriers	Structure of the organization	Lack of effective policies to facilitate information sharing and coordination	Q4+Q5+Q6+Q7+Q8 +Q9+Q10+Q11+Q12 +Q13+Q14	local NGOs and organizations is that they lack in adequate resources both financial and human resources(Libal & Harding 2011)
		Inadequate coordination and information sharing		
	Power	Withholding information as sources of power		
	Competiveness between organizations	Fear for facing competition		
	Accessibility and availability	Breach of confidentiality		
	Insufficient resources for sharing information	Limited inter-agency information sharing		
	Staff motivation	Employee turnover		In adequate operating space to help in the humanitarian causes regarding Syrian refugees (Balsari *et al.*, 2015).
		IT challenges	Q15+Q16+Q17+Q18+	

Technical barriers	Technology and overall information system Manual Supply chain	System implementation challenges	Q19+Q20+Q21+Q23	
		Need for donor support		
		Dynamic needs		
Quality barrier	Relevance of information	Lack in sharing information	Q24	

Case 7

Key Themes supported by interviewee Quotations	
Managerial barriers(one sub-themes)	**Lack skills and capacity building**
1- Skills and capacity building **Q1** "Now this can be a challenge as well…specifically in the beginning , it happens to me when I started working here because I was used to a specific system and now here a way more different it's complicated it's advanced system so I have had to understand each system or each sub system alone and then connect all these …. So you have numbers , you have to have skills in formulas from my point because there has to be some kind of formulas or equations for the people who work in the field they have to have computer skills …" Program manager **Q2** "This is what we are trying to do now with these new technologies and hardly you can find people in the field and good in technology or bringing those together but this I want you to be share information but with my rights saved and to make it like okay this an easy process and do it happy …" Project manager **Q3**"Of course building in the human resources it needs building all the time we believe that have in the HR in this NGO we have a unit for training for the internal training the capacity building of internal staff with the assessment they did the assessment buy we need to enhance capacity building …" Coordaination officer	
Organizational barriers(Four sub-themes)	**Structure of the organization , power ,competiveness between organizations and Accessibility and availability**
1- Structure of the organization **Q4** "So you can say there is limited horizontal coordination as I mentioned (external) ..but inside this NGO and clinics in the field yes . we follow our NGO policies.." Coordination officer **2- Competiveness and geographical biasness** **Q5**"Yea it's depending on the funding criteria for big chance for we can go but for the big millions because all organization have a high competitive for the fund so don't like to share it is it should be an strong NGO leading so it's and for the big NGO's like in Jordan scoped Rengos …. Now we are limited NGO's who can do the big work it's the big good work and spread over Jordan so when	

was a big tender these international NGO go to all of us and make in a hard position and it's a hard position for let's say for this NGO…" .Project manager

Q6 "…now we are building the trust between us and the government but the funding from outside its more to the international NGO and we find the last four years it was the hardest in raising funds for our projects in corporation internally this an important reason because of high competition between international and local NGOs for the fund…".Program manager

3- Power

Q7 "I have all the data on excel sheet on mine desktop then I go back to the requesting month and I got the number and I provide this number to the person who was asking about this internally …now externally I can't share information because of the level of my position I can't share and this information has benefits for other organizations or NGOs which is stronger than my NGOs…" Coordiantion officer

Q8 "With other partners no , but even if I received an e-mail of a question about any information I refer this to the responsible person who have the authority to answer… yes I don't have the authority to answer people outside…" Logistics manager

4- Accessibility and availability

Q9 "Yes, you can't give all the information that you have to everyone, now if certain donor is asking now there is a relationship, there is an agreement between us very early from the initiation of the service there is an agreement about what level of shared information would be giving" Project manager

Q10 "Okay now this also has to be agreed on and it would be for a certain level let's say that it is not touching the privacy of the people" Program manager

"…anything to be shared externally has to follow a procedure of approvals so it won't be my decision nor senior management its top management approval…" Logistics manager

Q11 "Okay now this also has to be agreed on and it would be for a certain level let's say that it is not touching the privacy of the people that I think depends on the NGO positions"Field officer

Technical barriers (2 sub-themes)	**Technology and overall information system and manual supply chain**

1- Technology and overall information system

Q12 "…the system is in place for reporting but you can have a challenge for example of cut of internet connection for example , and this report has to be submitted on Sunday and on Sunday there was the for a certain there was no internet connection on the clinic and they were an able to send this report so …" Field officer

Q13 "Till now the information management process is very hard and we are in the process even it's because it's because it's build with NGO it is more related to people so whenever people are meeting we find it hard to find these information …Even if it's like this is the handover meeting I left I hand over the information it's hard to find it because people don't want to search they want it easy to find the information system so even if it is handed over it is not the proper way of handing it over" Coordination officer

Q14 "…we do a CRM which is like centralize information system everybody will feed in his information and put in so this from now on but the old information all we are putting it in but it's not established and it's something related when you work with NGO with people it's not only information it has mind and hard so you can get the information but not the hard …..So how it was established here you can get the information up this project was established because this but not the actual why it was…”Project manager

Q15 “Yes so it’s sometimes it’s the facts but the hard part especially with the child abuse you can not find documentation for the cases of course it is there you can refer back again and again we have all these systems on but how to take it from stage to another stage…people to people now we are having our own this sharing , sharing point for everything but again managing information it’s very hard and how to share …”Coordination officer

Q16 “let say a challenge for worker and NGO this what we are trying to do is to have short reporting systems go directly to the point in order to help feel people to right for person as you go into the field and spend about 7 hours in the field and I need another one hour to write on it , so it’s too hard for field people…”Logistics manager

Q17 “The service itself but it happen once when one program and the project started , we working on a certain information system and when the projects end they said who want this to be installed in their NGO’s and we took that information system and we still working on that but in general no they don’t invest…”Program manager

Q18 “…there is problem with technology because we are like the other NGO’s we are like implementers we are too much into the field we are too much into people and taking less time into technology and documentations and these things sometimes you can find it these documentation but how its these all knowledge and information system are there building all my NGO information together…” Coordination officer

2- Manual Supply chain

Q19 “No , unless he is working with annually old paper work process which not this is the admin part ,you can take to the admin for me it’s the project it’s like okay we need to purchase tools and machines for this food processing for the color we have the cold storage which is with one and half million JD it’s the cost …” Logistics manager

Financial barriers (2 sub-themes)	**Insufficient funding for monitoring and evaluation , Competition from stable organizations**

1- Insufficient funding for monitoring and evaluation

Q20 “…We have the monitoring and evaluation in each step that will be things that is resources that we can build on later on it is of course if we work it out less if it will be spent less money as specially because we don’t have enough funding for us we seek funds for each project like if we go to this community we need to raise funds for that community for these needs or refer them to government or other NGO’s or privet sector to fulfill these things …” Program manager

Q21 “No, (Funding). it’s limited and we try to put certain amount in each proposal we put , like in poverty pocket we put okay this is limited we need to train the staff some donors refuse this because no we come to you because you are already experience so why…” Project manager

2- Competition from stable organizations

Q22 “Yea it’s depending on the funding criteria for big chance for we can go but for the big millions from the USA it is it should be an American NGO leading so it’s and for the big NGO’s like in Jordan scoped Rengos …. Now we are limited NGO’s who can do the big work it’s the big good work and spread over Jordan so when was a big tender these international NGO go to all of us and make in a hard position and yes it’s a hard position ”Coordination officer

Q23 "…now we are building the trust between us and the government but the funding from outside its more to the national NGO and we find the last four years it was the hardest in raising funds for our projects in corporation internally…"Project manager	
Opportunism	**(Exploiting other organizations)**
1- Exploitation **Q24** "…we have very good excellent corporation with international NGO's till the Syrian crises started now the money is big there and they are working alone and not working with local NGO's because its easier it's cheaper for them to get all the funds and have their own staff now even the challenge with corporation they know their staff and they take our staff and they higher sailors form them". Project manager **Q25**" in other NGO's that is well established in Jordan before and it's well recognized till now they are working with the people they know that the local NGO's are the key in the communities so they work with us on the mobilization of community starting the program this is part of our challenges…"Coordination officer	

Inter –organizational Information sharing barriers in case study (7)				
Key themes	**Sub-themes**	**Categories**	**Code (issue addressed) In the previous table**	**Secondary Data**
Managerial barriers	Skills and capacity building	Need for skills and capacity (e.g.IT and data management skills)	Q1+Q2+Q3	Needs of support and capacity building (NAJMAH website)
Organizational barriers	Power Accessibility and availability Competiveness between organizations Structure of the organization	Limited authority to share information Confidentiality and privacy Competiveness and geographical biasness Lack of effective policies to facilitate information sharing and coordination	Q4+Q5+Q6+Q7 +Q8+Q9+Q10+Q11	show actual situation instead they show improvement (Betts & Collier, 2015).

Technical barriers	Technology and overall information system Manual Supply chain	IT related problems Difficulties in extracting information Amorphous information system Lack of donor funding Information sharing is limited to suppliers who qualify for tenders annually	Q12+Q13+Q14+Q15 +Q16+Q17+Q18+Q19	Need to atraining of the workers
Financial barriers	Insufficient funding for monitoring and evaluation (M&E) Competition from stable organizations	Need for Monitoring& Evaluation funding Lack of funding due to stiff competition Using resources of other organizations	Q20+Q21+Q22+Q23	lack of coordination issue is compounded by the existence of lack of funding which is not proportional to the response requeirments (Betts&Collier 2015, data.unhcr.org)
Opportunism	Exploiting other organizations		Q24 +Q25	

Case 8

Key Themes supported by interviewee Quotations	
Managerial barriers (2 sub-themes)	**lack of skills and capacity building , Employee recruitment**
1- Skills and capacity building	

Q1 "Yeah because this is something that should be systematic work, he got communication skills. He got PM (project manager) he got leadership. What kind of demand he need according his duties to build it."Project manager

Q2 "Some of people they have six years or ten years' experience but still their positions feel coordinated and they don't get any capacity building they don't get any things. And also our staff they don't know what next... And I'm looking who's the one I should to replace me in some day. I need this second arm I need this people because if I left there is someone can handle everything's after me. So this is one of the things I'm not satisfied about. There is no clear plan or decisions about the human resource development in our NGOs." Logistics manager

2- Employee recruitment

Q3 "The challenges in implementations would lately recruitments process because when you have a program there two technical it takes time for us to recruit and train the candidate appropriately and so that they would enter the , enter and work appropriately within the umbrella and maintain this takes an effort from the employees in the field themselves and effort from us as program department… when you have a new recruited personal it takes time for this person to start practicing and delivering the appropriate service to maximum, number needed of the benefiters…" Program manager

Organizational barriers(3 sub-themes)	**structure of the organization insufficient resources for sharing information, Accessibility and availability**

1- Structure of the organization

Q4 "The challenge sometimes the response….from different stakeholders. When you like one of the projects we are working on some of ministry's they are working in the project we are working together. Yes we have their own." Coordination officer.

2- Insufficient resources for sharing information

Q5 "You ask if other NGOs share also the same their information with you. NO not all of them not all of them share. Some of them they are do not have enough resource to share relevant information". Field officer

Q6 "…even the tuition, national level, and at the government level, is very weak. So, this is affected by the end to the support we are getting as local NGOs. ". Project manager

3- Accessibility and availability

Q7 "…now information sharing it has two levels specially for JHAS because there is a kind of sharing guide lines let's say three levels there is a concept of sharing knowledge, sharing guide lines, and sharing details of benefiters other information not available on the portal web……this is a red line for some information to share that we can't cross details on benefiters is something of high confidentiality we would never share any piece of information related to a beneficiary details …" Program manager

Q8 "Three guide line or lets say the component dimension they combine with both internal and external sharing we don't share details on benefiters …. Never we don't share guide line that are pending approval …. With other NGO's why Because they are pending approval they are not approved yet once guide lines are approved it's harmless to share" Coordination officer **Q9** "As I mentioned coordination and information sharing go in line together we don't share personal or detailed information on benefiters otherwise if I , we have guide lines we have some instruction that can be …..By other colleagues working or by other NGO's yes sure we would share we would help others its okay" Project manager **Q10** "Just an internal issue (privacy of information), which this information is not needed for others to be available ." Logistics manager	
Technical barriers (3 sub-themes)	**Technology and overall information system , bureaucracy and manual supply chain**
1-Technology and overall information system **Q11** "…In fact , information system need regular monitoring and maintenance and this is a challenge but it's established…But it's established of course but it is in need to improve Well as we are expending of course it need improvement and it need working , it need adding other assess but we do that we grow smoothly and we grow slowly so that we would not have tangible gabs because any gaps in information system can't be retread or verified…" Coordination officer **Q12** "…we have not starting working with data information system except in late 2014 because we had to make sure that our employees can entire appropriate data correct data to the system and our program coordinator can extract the data they need from the program… okay before that we adhere to hard copies files for the patient in the clinics, now we have this kind of computerized system that saves a lot of effort a lot of time and a lot let's a lot of resources" Program manager **Q13** "As I mentioned the information system the clinical management system has not been established and finalized until 2014…" Program manager **Q14** "They are never interesting in invested in assists , unless they are donors who have identified implementing partner and would like to continue working with the same partner for a long period and now this the situation between this NGO and other donors now…"Project manager **Q15** "…if a donor has identified a partner and wants to work with that partner for long period then this donor not support investing in assists if there is an emergency response program that's duration only for 3 months then donor only will be interested in direct benefiters …" Coordination officer **Q16** "…it effects on how do you priorities on your activities within limited funding resource as I mentioned that the operation in Jordan humanitarian operation in Jordan challenging because donors have to cut regularly from the fund that they are providing to their partner because they have to work with what funds they have ……. And sometimes what fund they have do not cover all , doesn't cover the wish list of IT that we have I mean we do with to provide comprehensive primary health care to all people not only the refuges an not only not insured Jordanian…"Program manager	

Q17 "…but in some points we need to work together so sometimes the response of these people and commitment is make a challenge. The things will be delayed, some of them will not response with you and this will affect in the field."Logistics manager

Q18 "…we don't have a computerized system, for example, for sharing. But, we have an archive system for all the documents. So, through the secretary's office, and it was only need for information. She can get it from the archive system." Field officer

2- Bureaucracy

Q19 "…our challenges, sometimes, in implementing some projects comes that some donors, I would say, according to their regulations. They said a certain percentage, for example, the admin cost. While the project tied recovered more" Project manager

3-Manual Supply chain

Q20 "Although, maybe, we don't have a well-organized supply chain, I would say. We have a chain." Logistics manager

Financial barriers (2 sub-themes)	**Limitations of resources (people, IT, Knowledge information sharing to workers)**

1- Knowledge and experience sharing among workers

Q21 "I think knowledge and experience means the success ,If you would like to success this is the way to success and funding absolutely helps the success .but the managers if they just hold their knowledge and experience for themselves not advice other employee who have really limited knowledge and experience and they got out from the place they are working on believe me they will felt and this felt will going with you even if you left your work. Actually the success if you left to share and if you left your work and the success is continuing this is your success. So we have this problem actually…some organization they will don't like to give you their experience and knowledge and they prefer always to get yours"Program manager

2- IT

Q22 "Actually, I think my organization (NGO), they are outdated and they try to change all the servers to implement the portal for the communication system with the limited fund that we have. Definitely, there's a problem with financing to this situation." Coordination officer

Inter –organizational Information sharing barriers in case study (8)				
Key themes	**Sub-themes**	**Categories**	**Code (issue addressed) In the previous table**	**Secondary Data**

Managerial barriers	Employee recruitment Skills and capacity building	Delay in service delivery due to lengthy engagement process Confidentiality and privacy Skills and capacity building	Q1+Q2+Q3	humanitarian response will be addressed through capacity building .
Organizational barrier	Structure of the organization Insufficient resources for sharing information Accessibility and availability	Lack of structures to facilitate effective coordination Limited donor funding Limitations on expenditures	Q4+Q5+Q6+Q7 +Q8+Q9+Q10	
Technical barriers	Technology and overall information system	Need for monitoring and maintenance Lack of information system Lack of donor support Lack of commitment Lack of computerized information system	Q11+Q12+Q13+Q14 +Q15+Q16+Q17+Q18 +Q19+Q20	major infrastructure gaps

Financial barriers	Knowledge and experience sharing among workers	Lack of knowledge/experience and information sharing IT	Q21+Q22	lack of coordination issue is compounded by the existence of lack of funding which is not proportional to the response requeirments (Schneider, *et al.*, 2016 **,** data.unhcr.org)

Summary for local organizations (cases 6, 7, and 8)

Inter –organizational Information sharing barriers				
Managerial barriers	**Organizational barriers**	**Financial barriers**	**Technical barriers**	**Other barriers**
a.Lack of trust **b.Lack of donor confidence** **c. Skills and capacity building** **d.Employee recruitment**	**a.Structure of the organization** **b.Competiveness between organizations** **c.Insufficient resources for sharing information** **d.Power** **Staff motivation** **e. Accessibility and availability**	**a.Insufficient funding for monitoring and evaluation** **b.Competition from stable organizations** **c.Bureaucracy** **d.Knowledge and experience sharing among workers** **e.IT,**	**a.Technology and overall information system** **b.Supply chain**	**a.Quality barrier** **i. Untimely information sharing** **b. Opportunism** **i.Exploitation**

Appendix 9: Frequency of codes for all cases

Case number	Barrier	Frequency of codes*	Frequency infraction**
1	Management	5	0.17
	Organizational	17	0.57
	Technical	6	0.2
	Financial	1	0.03
	Socio-cultural and religious barrier	1	0.03
Total		**30**	**1**
2	Management	8	0.31
	Organizational	11	0.42
	Technical	7	0.27
Total		**26**	**1**
3	Management	4	0.13
	Organizational	10	0.31
	Technical	9	0.28
	Socio-cultural and religious barrier	6	0.19
	Language	2	0.06
	Quality	1	0.03
Total		**31**	**1**
4	Management	3	0.16
	Organizational	12	0.63
	Technical	3	0.16
	Language	1	0.05
Total		**19**	**1**
5	Management	1	0.04
	Organizational	8	0.32
	Technical	5	0.2
	Quality	7	0.28
	Socio-cultural and religious barrier	3	0.12
	Language	1	0.04
Total		**25**	**1**
6	Management	3	0.13
	Organizational	11	0.46
	Technical	9	0.38
	Quality	1	0.04
Total		**24**	**1**
7	Management	3	0.12
	Organizational	9	0.35
	Technical	8	0.31
	Financial	4	0.15
	Opportunism	2	0.08

Total		**26**	**1**
8	Management	3	0.14
	Organizational	7	0.32
	Technical	10	0.45
	Financial	2	0.09
Total		**22**	**1**

*** :**Total number of codes for each barrier in each case of the thematic analysis.

* *: The frequency infraction is the ratio between the frequency of codes for each barrier and the total frequency of codes in each case.